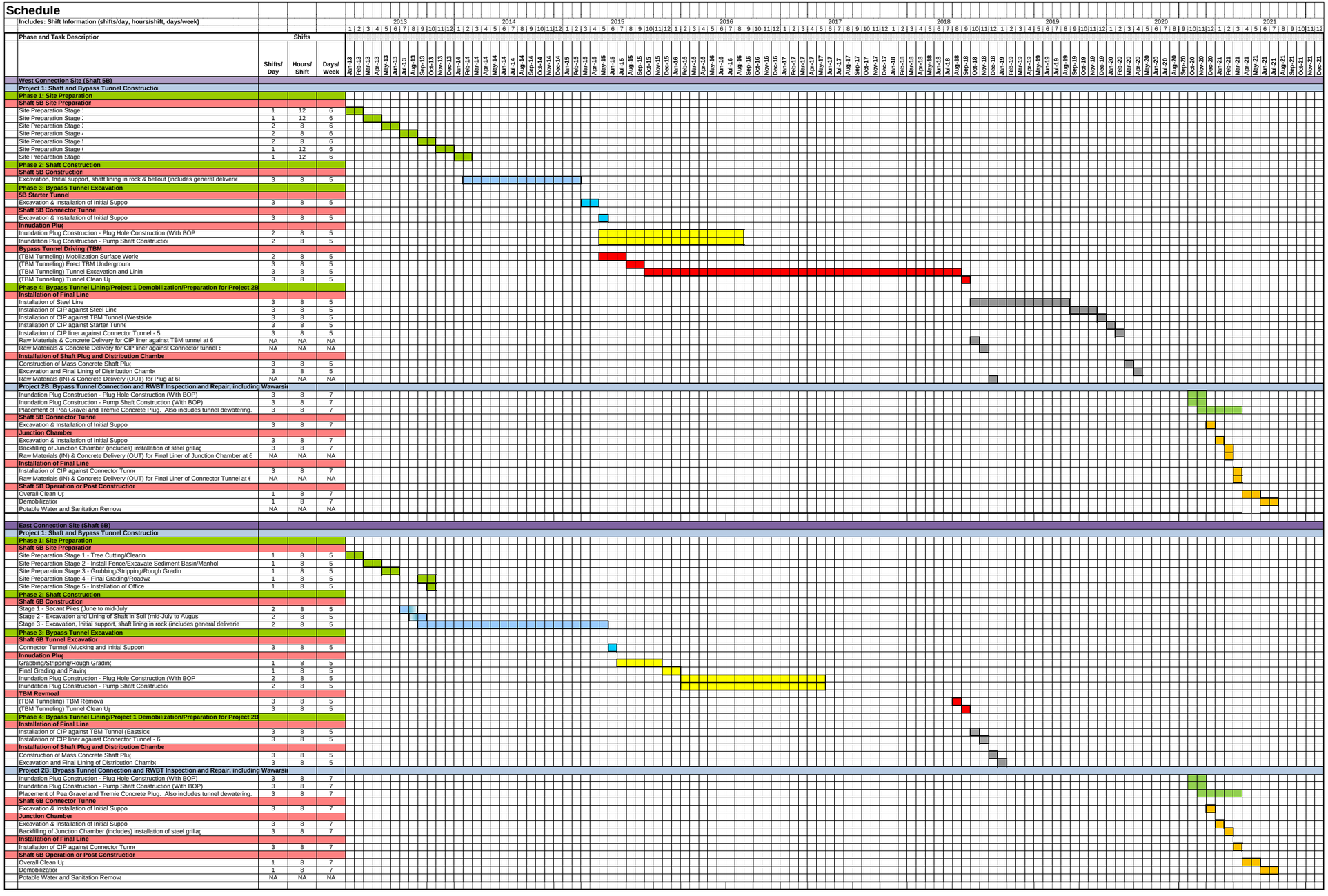
Appendix 2-11
Air Quality

Schedule

Schedule

Includes: Shift Information (shifts/day, hours/shift, days/week)

Phase and Task Descriptior	Shifts/ Day	Hours/ Shift	Days/ Week
West Connection Site (Shaft 5B)			
Project 1: Shaft and Bypass Tunnel Constructio			
Phase 1: Site Preparation			
Shaft 5B Site Preparatior			
Site Preparation Stage 1	1	12	6
Site Preparation Stage 2	1	12	6
Site Preparation Stage 3	2	8	6
Site Preparation Stage 4	2	8	6
Site Preparation Stage 5	2	8	6
Site Preparation Stage 6	1	12	6
Site Preparation Stage 7	1	12	6
Phase 2: Shaft Construction			
Shaft 5B Constructior			
Excavation, Initial support, shaft lining in rock & bellout (includes general deliverie	3	8	5
Phase 3: Bypass Tunnel Excavation			
SB Starter Tunne			
Excavation & Installation of Initial Suppo	3	8	5
Shaft 5B Connector Tunne			
Excavation & Installation of Initial Suppo	3	8	5
Innudation Plug			
Inundation Plug Construction - Plug Hole Construction (With BOP	2	8	5
Inundation Plug Construction - Pump Shaft Constructio	2	8	5
Bypass Tunnel Driving (TBM			
(TBM Tunneling) Mobilization Surface Work	2	8	5
(TBM Tunneling) Erect TBM Undergroun	3	8	5
(TBM Tunneling) Tunnel Excavation and Linin	3	8	5
(TBM Tunneling) Tunnel Clean Up	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B			
Installation of Final Line			
Installation of Steel Line	3	8	5
Installation of CIP against Steel Line	3	8	5
Installation of CIP against TBM Tunnel (Westside	3	8	5
Installation of CIP against Starter Tunne	3	8	5
Installation of CIP liner against Connector Tunnel - 5	3	8	5
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6	NA	NA	NA
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6	NA	NA	NA
Installation of Shaft Plug and Distribution Chambe			
Construction of Mass Concrete Shaft Plug	3	8	5
Excavation and Final Lining of Distribution Chambe	3	8	5
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6I	NA	NA	NA
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsi			
Inundation Plug Construction - Plug Hole Construction (With BOP)	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	3	8	7
Shaft 5B Connector Tunne			
Excavation & Installation of Initial Suppo	3	8	7
Junction Chambe			
Excavation & Installation of Initial Suppo	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillag	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA
Installation of Final Line			
Installation of CIP against Connector Tunne	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6	NA	NA	NA
Shaft 5B Operation or Post Constructior			
Overall Clean Up	1	8	7
Demobilizatior	1	8	7
Potable Water and Sanitation Remova	NA	NA	NA
East Connection Site (Shaft 6B)			
Project 1: Shaft and Bypass Tunnel Constructio			
Phase 1: Site Preparation			
Shaft 6B Site Preparation			
Site Preparation Stage 1 - Tree Cutting/Clearin	1	8	5
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manhol	1	8	5
Site Preparation Stage 3 - Grubbing/Stripping/Rough Gradin	1	8	5
Site Preparation Stage 4 - Final Grading/Roadwa	1	8	5
Site Preparation Stage 5 - Installation of Office	1	8	5
Phase 2: Shaft Construction			
Shaft 6B Constructior			
Stage 1 - Secant Piles (June to mid-July	2	8	5
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to Augus	2	8	5
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliverie	2	8	5
Phase 3: Bypass Tunnel Excavation			
Shaft 6B Tunnel Excavatior			
Connector Tunnel (Mucking and Initial Support	3	8	5
Innudation Plug			
Grabbing/Stripping/Rough Gradinç	1	8	5
Final Grading and Pavin	1	8	5
Inundation Plug Construction - Plug Hole Construction (With BOP	2	8	5
Inundation Plug Construction - Pump Shaft Constructio	2	8	5
TBM Revmoal			
(TBM Tunneling) TBM Remova	3	8	5
(TBM Tunneling) Tunnel Clean Up	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B			
Installation of Final Line			
Installation of CIP against TBM Tunnel (Eastside	3	8	5
Installation of CIP liner against Connector Tunnel - 6	3	8	5
Installation of Shaft Plug and Distribution Chambe			
Construction of Mass Concrete Shaft Plug	3	8	5
Excavation and Final Lining of Distribution Chambe	3	8	5
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsi			
Inundation Plug Construction - Plug Hole Construction (With BOP)	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	3	8	7
Shaft 6B Connector Tunne			
Excavation & Installation of Initial Suppo	3	8	7
Junction Chambe			
Excavation & Installation of Initial Suppo	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillag	3	8	7
Installation of Final Line			
Installation of CIP against Connector Tunne	3	8	7
Shaft 6B Operation or Post Constructior			
Overall Clean Up	1	8	7
Demobilizatior	1	8	7
Potable Water and Sanitation Remova	NA	NA	NA



Truck Projections

Truck Projections

Includes: Average and Peak Trucks Trips (Including both in and out)

Phase and Task Description	Average Truck Trips	Peak Truck Trips	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5
			2013												2014												2015																
West Connection Site (Shaft 5B)			**Average Truck Trips**																																								
Project 1: Shaft and Bypass Tunnel Construction																																										
Phase 1: Site Preparation																																										
Shaft 5B Site Preparation																																										
Site Preparation Stage 1	16	34	16	16																																							
Site Preparation Stage 2	26	52			26	26																																					
Site Preparation Stage 3	22	44					22	22																																			
Site Preparation Stage 4	6	12							6	6																																	
Site Preparation Stage 5	6	12									6	6																															
Site Preparation Stage 6	6	12											6	6																													
Site Preparation Stage 7	4	10													4																												
Phase 2: Shaft Construction																																										
Shaft 5B Construction																																										
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	26	46														26	26	26	26	26	26	26	26	26	26	26	26	38															
Phase 3: Bypass Tunnel Excavation																																										
5B Starter Tunnel																																										
Excavation & Installation of Initial Support	44	85																											44	44													
Shaft 5B Connector Tunnel																																										
Excavation & Installation of Initial Support	15	28																												15												
Innudation Plug																																										
Inundation Plug Construction - Plug Hole Construction (With BOP)	12	18																												12	12	12	12	12	12	12	12	12	12	12	12	12
Inundation Plug Construction - Pump Shaft Construction	-	-																																								
Bypass Tunnel Driving (TBM)																																										
(TBM Tunneling) Mobilization Surface Works	4	8																												4	4	4										
(TBM Tunneling) Erect TBM Underground	4	8																															4	4								
(TBM Tunneling) Tunnel Excavation and Lining	78	154																																	78	78	78	78	78	78	78	78
(TBM Tunneling) Tunnel Clean Up	8	12																																								
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B																																										
Installation of Final Liner																																										
Installation of Steel Liner	14	20																																								
Installation of CIP against Steel Liner	16	19																																								
Installation of CIP against TBM Tunnel (Westside)	26	35																																								
Installation of CIP against Starter Tunnel	29	35																																								
Installation of CIP liner against Connector Tunnel - 5B	7	11																																								
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	81	98																																								
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	14	28																																								
Installation of Shaft Plug and Distribution Chamber																																										
Construction of Mass Concrete Shaft Plug	12	23																																								
Excavation and Final Lining of Distribution Chamber	25	39																																								
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	39	77																																								
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																										
Inundation Plug Construction - Plug Hole Construction (With BOP)	1	1																																								
Inundation Plug Construction - Pump Shaft Construction (With BOP)	1	1																																								
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	84	84																																								
Shaft 5B Connector Tunnel																																										
Excavation & Installation of Initial Support	23	45																																								
Junction Chamber																																										
Excavation & Installation of Initial Support	32	63																																								
Backfilling of Junction Chamber (includes) installation of steel grillage	12	24																																								
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6B	32	62																																								
Installation of Final Liner																																										
Installation of CIP against Connector Tunnel	6	12																																								
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6B	15	31																																								
Shaft 5B Operation or Post Construction																																										
Overall Clean Up	8	12																																								
Demobilization	8	12																																								
Potable Water and Sanitation Removal	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Truck Projections

Includes: Average and Peak Trucks Trips (Including both in and out)

Phase and Task Description	Average Truck Trips	Peak Truck Trips	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
			2016							2017												2018								
			6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
West Connection Site (Shaft 5B)																														
Project 1: Shaft and Bypass Tunnel Construction																														
Phase 1: Site Preparation																														
Shaft 5B Site Preparation																														
Site Preparation Stage 1	16	34																												
Site Preparation Stage 2	26	52																												
Site Preparation Stage 3	22	44																												
Site Preparation Stage 4	6	12																												
Site Preparation Stage 5	6	12																												
Site Preparation Stage 6	6	12																												
Site Preparation Stage 7	4	10																												
Phase 2: Shaft Construction																														
Shaft 5B Construction																														
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	26	46																												
Phase 3: Bypass Tunnel Excavation																														
5B Starter Tunnel																														
Excavation & Installation of Initial Support	44	85																												
Shaft 5B Connector Tunnel																														
Excavation & Installation of Initial Support	15	28																												
Innudation Plug																														
Inundation Plug Construction - Plug Hole Construction (With BOP)	12	18	12	12	12																									
Inundation Plug Construction - Pump Shaft Construction	-	-																												
Bypass Tunnel Driving (TBM)																														
(TBM Tunneling) Mobilization Surface Works	4	8																												
(TBM Tunneling) Erect TBM Underground	4	8																												
(TBM Tunneling) Tunnel Excavation and Lining	78	154	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	
(TBM Tunneling) Tunnel Clean Up	8	12																												8
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B																														
Installation of Final Liner																														
Installation of Steel Liner	14	20																												
Installation of CIP against Steel Liner	16	19																												
Installation of CIP against TBM Tunnel (Westside)	26	35																												
Installation of CIP against Starter Tunnel	29	35																												
Installation of CIP liner against Connector Tunnel - 5B	7	11																												
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	81	98																												
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	14	28																												
Installation of Shaft Plug and Distribution Chamber																														
Construction of Mass Concrete Shaft Plug	12	23																												
Excavation and Final Lining of Distribution Chamber	25	39																												
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	39	77																												
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																														
Inundation Plug Construction - Plug Hole Construction (With BOP)	1	1																												
Inundation Plug Construction - Pump Shaft Construction (With BOP)	1	1																												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	84	84																												
Shaft 5B Connector Tunnel																														
Excavation & Installation of Initial Support	23	45																												
Junction Chamber																														
Excavation & Installation of Initial Support	32	63																												
Backfilling of Junction Chamber (includes) installation of steel grillage	12	24																												
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6B	32	62																												
Installation of Final Liner																														
Installation of CIP against Connector Tunnel	6	12																												
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6B	15	31																												
Shaft 5B Operation or Post Construction																														
Overall Clean Up	8	12																												
Demobilization	8	12																												
Potable Water and Sanitation Removal	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Truck Projections

Includes: Average and Peak Trucks Trips (Including both in and out)

Phase and Task Description	Average Truck Trips	Peak Truck Trips	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
			10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
			2019															2020												2021											
West Connection Site (Shaft 5B)																																								
Project 1: Shaft and Bypass Tunnel Construction																																								
Phase 1: Site Preparation																																								
Shaft 5B Site Preparation																																								
Site Preparation Stage 1	16	34																																						
Site Preparation Stage 2	26	52																																						
Site Preparation Stage 3	22	44																																						
Site Preparation Stage 4	6	12																																						
Site Preparation Stage 5	6	12																																						
Site Preparation Stage 6	6	12																																						
Site Preparation Stage 7	4	10																																						
Phase 2: Shaft Construction																																								
Shaft 5B Construction																																								
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	26	46																																						
Phase 3: Bypass Tunnel Excavation																																								
5B Starter Tunnel																																								
Excavation & Installation of Initial Support	44	85																																						
Shaft 5B Connector Tunnel																																								
Excavation & Installation of Initial Support	15	28																																						
Innudation Plug																																								
Inundation Plug Construction - Plug Hole Construction (With BOP)	12	18																																						
Inundation Plug Construction - Pump Shaft Construction	-	-																																						
Bypass Tunnel Driving (TBM)																																								
(TBM Tunneling) Mobilization Surface Works	4	8																																						
(TBM Tunneling) Erect TBM Underground	4	8																																						
(TBM Tunneling) Tunnel Excavation and Lining	78	154																																						
(TBM Tunneling) Tunnel Clean Up	8	12																																						
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B																																								
Installation of Final Liner																																								
Installation of Steel Liner	14	20	14	14	14	14	14	14	14	14	14	14	14																											
Installation of CIP against Steel Liner	16	19												16	16	16																									
Installation of CIP against TBM Tunnel (Westside)	26	35															26																								
Installation of CIP against Starter Tunnel	29	35																29																							
Installation of CIP liner against Connector Tunnel - 5B	7	11																	7																						
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	81	98	81																																					
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	14	28		14																																			
Installation of Shaft Plug and Distribution Chamber																																								
Construction of Mass Concrete Shaft Plug	12	23																		12																					
Excavation and Final Lining of Distribution Chamber	25	39																			25																				
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	39	77				39																																		
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																								
Inundation Plug Construction - Plug Hole Construction (With BOP)	1	1																								1	1												
Inundation Plug Construction - Pump Shaft Construction (With BOP)	1	1																								1	1												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	84	84																									84												
Shaft 5B Connector Tunnel																																								
Excavation & Installation of Initial Support	23	45																										23												
Junction Chamber																																								
Excavation & Installation of Initial Support	32	63																											32											
Backfilling of Junction Chamber (includes) installation of steel grillage	12	24																												12										
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6B	32	62																												32										
Installation of Final Liner																																								
Installation of CIP against Connector Tunnel	6	12																														6								
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6B	15	31																														15								
Shaft 5B Operation or Post Construction																																								
Overall Clean Up	8	12																															8	8						
Demobilization	8	12																																	8	8					
Potable Water and Sanitation Removal	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8					8	8	8	8	8	8	8	8							

Truck Projections

Includes: Average and Peak Trucks Trips (Including both in and out)

Phase and Task Description	Average Truck Trips	Peak Truck Trips	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5
			2013												2014												2015																
East Connection Site (Shaft 6B)																																											
Project 1: Shaft and Bypass Tunnel Construction																																											
Phase 1: Site Preparation																																											
Shaft 6B Site Preparation																																											
Site Preparation Stage 1 - Tree Cutting/Clearing	4	4	4	4																																							
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	6	10			6	6																																					
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	8	10					8	8																																			
Site Preparation Stage 4 - Final Grading/Roadway	8	10									8	8																															
Site Preparation Stage 5 - Installation of Offices	4	4										4																															
Phase 2: Shaft Construction																																											
Shaft 6B Construction																																											
Stage 1 - Secant Piles (June to mid-July)	23	41							23																																		
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	23	41								31	23																																
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	24	40									24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24											
Phase 3: Bypass Tunnel Excavation																																											
Shaft 6B Tunnel Excavation																																											
Connector Tunnel (Mucking and Initial Support)	40	78																													40												
Innudation Plug																																											
Grabbing/Stripping/Rough Grading	10	12																														10	10	10	10	10						
Final Grading and Paving	8	10																																			8	8					
Inundation Plug Construction - Plug Hole Construction (With BOP)	12	18																																					12	12	12	12	
Inundation Plug Construction - Pump Shaft Construction																																										
TBM Revmoal																																										
(TBM Tunneling) TBM Removal	10	20																																								
(TBM Tunneling) Tunnel Clean Up	10	20																																								
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B																																										
Installation of Final Liner																																										
Installation of CIP against TBM Tunnel (Eastside)	65	81																																								
Installation of CIP liner against Connector Tunnel - 6B	11	22																																								
Installation of Shaft Plug and Distribution Chamber																																										
Construction of Mass Concrete Shaft Plug	31	67																																								
Excavation and Final LIning of Distribution Chamber	25	39																																								
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																										
Inundation Plug Construction - Plug Hole Construction (With BOP)	1	1																																								
Inundation Plug Construction - Pump Shaft Construction (With BOP)	1	1																																								
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	84	84																																								
Shaft 6B Connector Tunnel																																										
Excavation & Installation of Initial Support	23	45																																								
Junction Chamber																																										
Excavation & Installation of Initial Support	32	63																																								
Backfilling of Junction Chamber (includes) installation of steel grillage	12	24																																								
Installation of Final Liner																																										
Installation of CIP against Connector Tunnel	6	12																																								
Shaft 6B Operation or Post Construction																																										
Overall Clean Up	8	12																																								
Demobilization	8	12																																								
Potable Water and Sanitation Removal	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
West Connection Site Total Truck Trips			24	24	34	34	30	30	14	14	14	14	14	14	12	34	34	34	34	34	34	34	34	34	34	34	34	46	52	52	39	24	24	24	24	98	98	98	98	98	98	98	98
East Connection Site Total Truck Trips			12	12	14	14	16	16	31	39	63	44	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	48	18	18	18	18	18	16	16	20	20	20	20	20

Truck Projections

Includes: Average and Peak Trucks Trips (Including both in and out)

Phase and Task Description	Average Truck Trips	Peak Truck Trips	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
			2016							2017												2018								
			6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
East Connection Site (Shaft 6B)																														
Project 1: Shaft and Bypass Tunnel Construction																														
Phase 1: Site Preparation																														
Shaft 6B Site Preparation																														
Site Preparation Stage 1 - Tree Cutting/Clearing	4	4																												
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	6	10																												
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	8	10																												
Site Preparation Stage 4 - Final Grading/Roadway	8	10																												
Site Preparation Stage 5 - Installation of Offices	4	4																												
Phase 2: Shaft Construction																														
Shaft 6B Construction																														
Stage 1 - Secant Piles (June to mid-July)	23	41																												
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	23	41																												
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	24	40																												
Phase 3: Bypass Tunnel Excavation																														
Shaft 6B Tunnel Excavation																														
Connector Tunnel (Mucking and Initial Support)	40	78																												
Innudation Plug																														
Grabbing/Stripping/Rough Grading	10	12																												
Final Grading and Paving	8	10																												
Inundation Plug Construction - Plug Hole Construction (With BOP)	12	18	12	12	12	12	12	12	12	12	12	12	12	12																
Inundation Plug Construction - Pump Shaft Construction																														
TBM Revmoal																														
(TBM Tunneling) TBM Removal	10	20																											10	
(TBM Tunneling) Tunnel Clean Up	10	20																												10
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B																														
Installation of Final Liner																														
Installation of CIP against TBM Tunnel (Eastside)	65	81																												
Installation of CIP liner against Connector Tunnel - 6B	11	22																												
Installation of Shaft Plug and Distribution Chamber																														
Construction of Mass Concrete Shaft Plug	31	67																												
Excavation and Final LIning of Distribution Chamber	25	39																												
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																														
Inundation Plug Construction - Plug Hole Construction (With BOP)	1	1																												
Inundation Plug Construction - Pump Shaft Construction (With BOP)	1	1																												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	84	84																												
Shaft 6B Connector Tunnel																														
Excavation & Installation of Initial Support	23	45																												
Junction Chamber																														
Excavation & Installation of Initial Support	32	63																												
Backfilling of Junction Chamber (includes) installation of steel grillage	12	24																												
Installation of Final Liner																														
Installation of CIP against Connector Tunnel	6	12																												
Shaft 6B Operation or Post Construction																														
Overall Clean Up	8	12																												
Demobilization	8	12																												
Potable Water and Sanitation Removal	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
West Connection Site Total Truck Trips			98	98	98	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	16
East Connection Site Total Truck Trips			20	20	20	20	20	20	20	20	20	20	20	20	8	8	8	8	8	8	8	8	8	8	8	8	8	8	18	18

Truck Projections

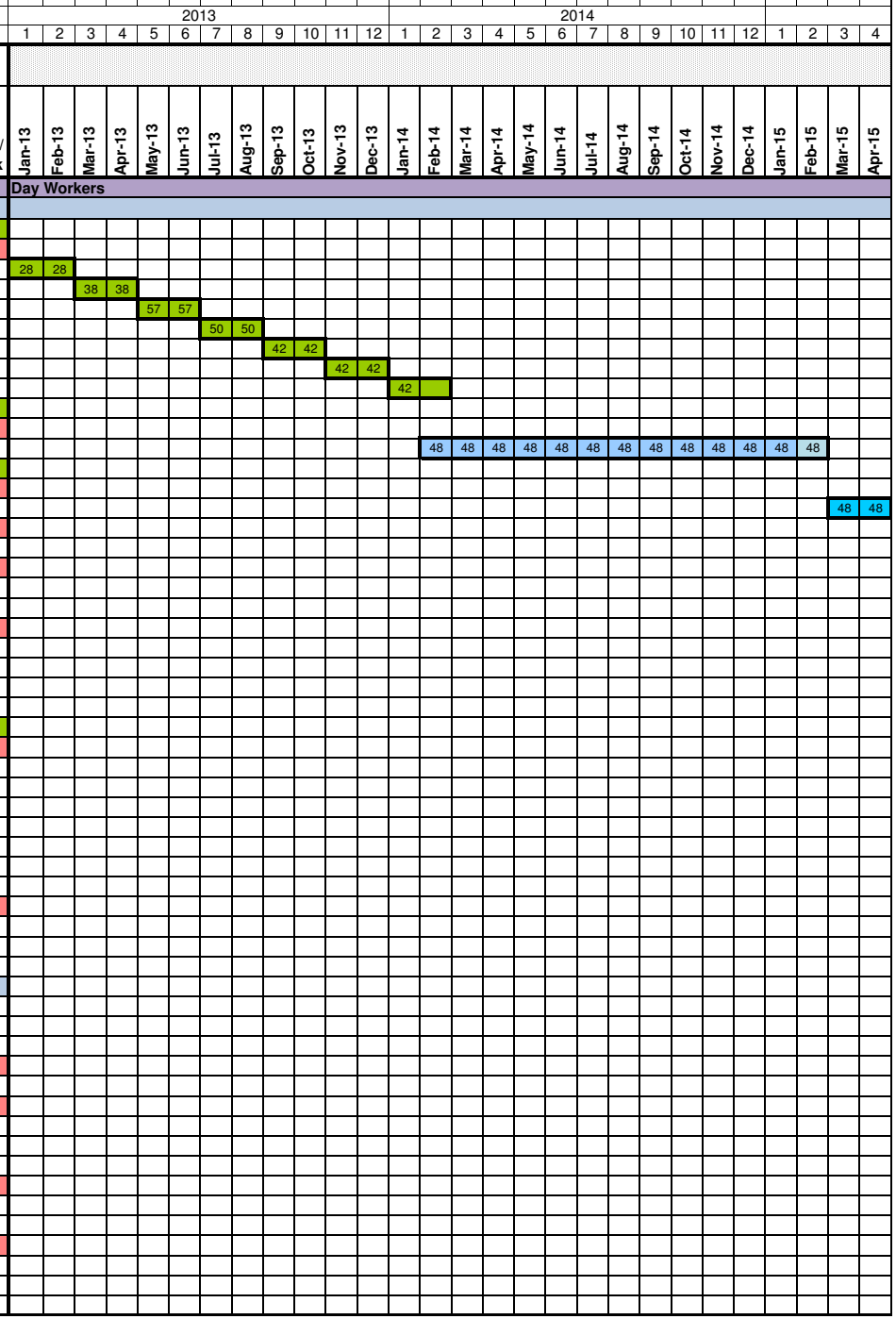
Includes: Average and Peak Trucks Trips (Including both in and out)

Phase and Task Description	Average Truck Trips	Peak Truck Trips	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
			10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
			2019															2020												2021											
East Connection Site (Shaft 6B)																																								
Project 1: Shaft and Bypass Tunnel Construction																																								
Phase 1: Site Preparation																																								
Shaft 6B Site Preparation																																								
Site Preparation Stage 1 - Tree Cutting/Clearing	4	4																																						
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	6	10																																						
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	8	10																																						
Site Preparation Stage 4 - Final Grading/Roadway	8	10																																						
Site Preparation Stage 5 - Installation of Offices	4	4																																						
Phase 2: Shaft Construction																																								
Shaft 6B Construction																																								
Stage 1 - Secant Piles (June to mid-July)	23	41																																						
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	23	41																																						
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	24	40																																						
Phase 3: Bypass Tunnel Excavation																																								
Shaft 6B Tunnel Excavation																																								
Connector Tunnel (Mucking and Initial Support)	40	78																																						
Innudation Plug																																								
Grabbing/Stripping/Rough Grading	10	12																																						
Final Grading and Paving	8	10																																						
Inundation Plug Construction - Plug Hole Construction (With BOP)	12	18																																						
Inundation Plug Construction - Pump Shaft Construction																																								
TBM Revmoal																																								
(TBM Tunneling) TBM Removal	10	20																																						
(TBM Tunneling) Tunnel Clean Up	10	20																																						
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B																																								
Installation of Final Liner																																								
Installation of CIP against TBM Tunnel (Eastside)	65	81	65																																					
Installation of CIP liner against Connector Tunnel - 6B	11	22		11																																				
Installation of Shaft Plug and Distribution Chamber																																								
Construction of Mass Concrete Shaft Plug	31	67			31																																				
Excavation and Final LIning of Distribution Chamber	25	39				25																																		
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																								
Inundation Plug Construction - Plug Hole Construction (With BOP)	1	1																								1	1												
Inundation Plug Construction - Pump Shaft Construction (With BOP)	1	1																								1	1												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	84	84																									84												
Shaft 6B Connector Tunnel																																								
Excavation & Installation of Initial Support	23	45																										23												
Junction Chamber																																								
Excavation & Installation of Initial Support	32	63																											32											
Backfilling of Junction Chamber (includes) installation of steel grillage	12	24																												12										
Installation of Final Liner																																								
Installation of CIP against Connector Tunnel	6	12																													6									
Shaft 6B Operation or Post Construction																																								
Overall Clean Up	8	12																															8	8						
Demobilization	8	12																																	8	8				
Potable Water and Sanitation Removal	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8					8	8	8	8	8	8	8	8						
West Connection Site Total Truck Trips			##	36	22	61	22	22	22	22	22	22	24	24	24	34	37	15	20	33					10	94	31	40	52	29	16	16	8	8						
East Connection Site Total Truck Trips			73	19	39	33	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8					10	94	31	40	20	14	16	16	8	8						

Worker Projections

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week
West Connection Site (Shaft 5B)						
Project 1: Shaft and Bypass Tunnel Construction						
Phase 1: Site Preparation						
Shaft 5B Site Preparation						
Site Preparation Stage 1	28	-	-	1	12	6
Site Preparation Stage 2	38	-	-	1	12	6
Site Preparation Stage 3	57	57	-	2	8	6
Site Preparation Stage 4	50	50	-	2	8	6
Site Preparation Stage 5	42	42	-	2	8	6
Site Preparation Stage 6	42	-	-	1	12	6
Site Preparation Stage 7	42	-	-	1	12	6
Phase 2: Shaft Construction						
Shaft 5B Construction						
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5
Phase 3: Bypass Tunnel Excavation						
5B Starter Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	5
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	10	10	10	3	8	5
Innudation Plug						
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5
Bypass Tunnel Driving (TBM)						
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2						
Installation of Final Liner						
Installation of Steel Liner	69	63	63	3	8	5
Installation of CIP against Steel Liner	42	36	36	3	8	5
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5
Installation of CIP against Starter Tunnel	48	42	42	3	8	5
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA
Installation of Shaft Plug and Distribution Chamber						
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing						
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Junction Chamber						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA
Installation of Final Liner						
Installation of CIP against Connector Tunnel	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6	NA	NA	NA	NA	NA	NA
Shaft 5B Operation or Post Construction						
Overall Clean Up	42	-	-	1	8	7
Demobilization	42	-	-	1	8	7
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA



Worker Projections

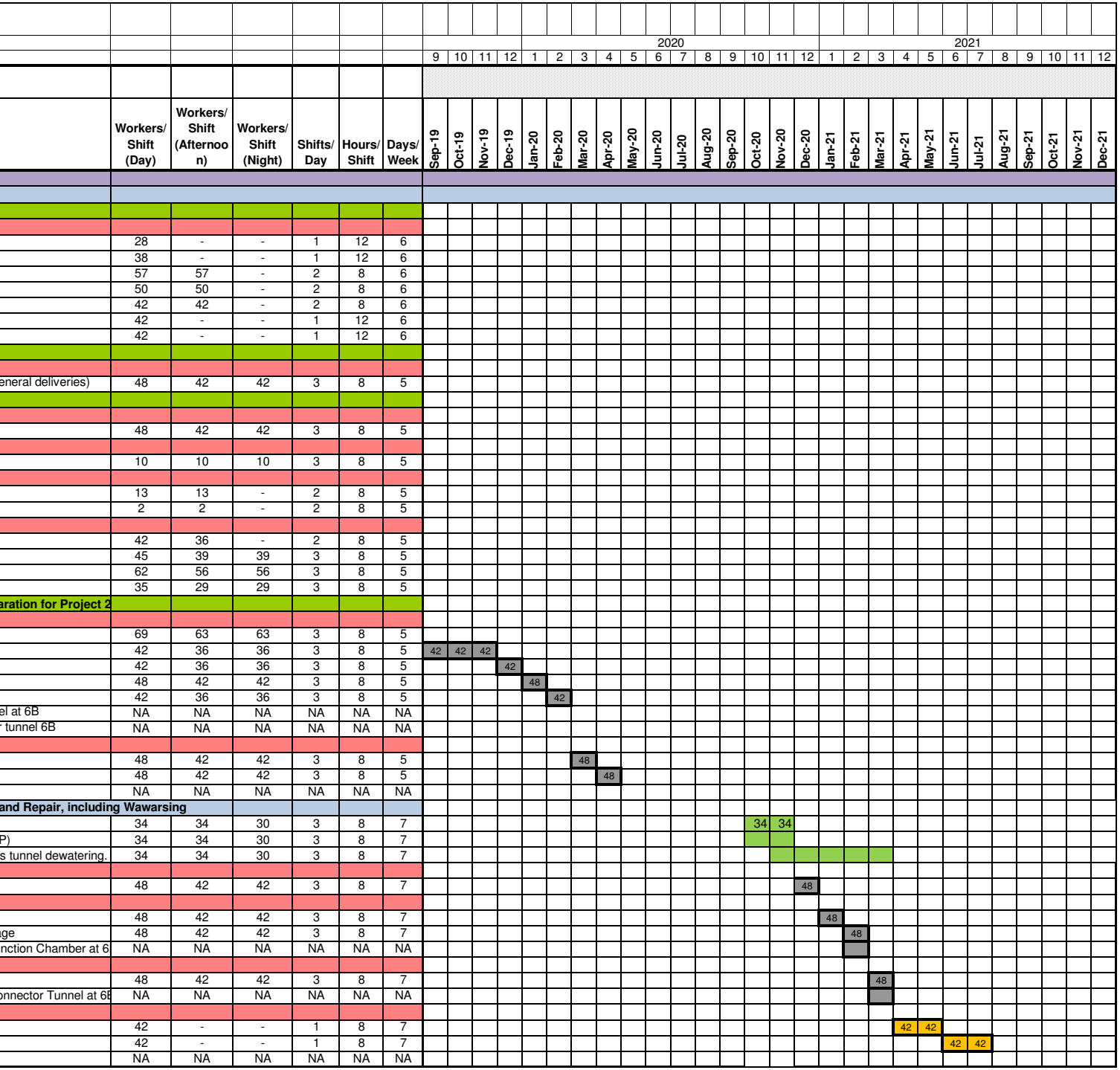
	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
							2015								2016												2017						
							5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
West Connection Site (Shaft 5B)																																	
Project 1: Shaft and Bypass Tunnel Construction																																	
Phase 1: Site Preparation																																	
Shaft 5B Site Preparation																																	
Site Preparation Stage 1	28	-	-	1	12	6																											
Site Preparation Stage 2	38	-	-	1	12	6																											
Site Preparation Stage 3	57	57	-	2	8	6																											
Site Preparation Stage 4	50	50	-	2	8	6																											
Site Preparation Stage 5	42	42	-	2	8	6																											
Site Preparation Stage 6	42	-	-	1	12	6																											
Site Preparation Stage 7	42	-	-	1	12	6																											
Phase 2: Shaft Construction																																	
Shaft 5B Construction																																	
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5																											
Phase 3: Bypass Tunnel Excavation																																	
5B Starter Tunnel																																	
Excavation & Installation of Initial Support	48	42	42	3	8	5																											
Shaft 5B Connector Tunnel																																	
Excavation & Installation of Initial Support	10	10	10	3	8	5	10																										
Innudation Plug																																	
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13											
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2											
Bypass Tunnel Driving (TBM)																																	
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5	42	42	42																								
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5				45	45																						
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5						62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																											
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																	
Installation of Final Liner																																	
Installation of Steel Liner	69	63	63	3	8	5																											
Installation of CIP against Steel Liner	42	36	36	3	8	5																											
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5																											
Installation of CIP against Starter Tunnel	48	42	42	3	8	5																											
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5																											
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA																											
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA																											
Installation of Shaft Plug and Distribution Chamber																																	
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																											
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5																											
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA																											
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																	
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																											
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																											
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																											
Shaft 5B Connector Tunnel																																	
Excavation & Installation of Initial Support	48	42	42	3	8	7																											
Junction Chamber																																	
Excavation & Installation of Initial Support	48	42	42	3	8	7																											
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																											
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA																											
Installation of Final Liner																																	
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																											
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6B	NA	NA	NA	NA	NA	NA																											
Shaft 5B Operation or Post Construction																																	
Overall Clean Up	42	-	-	1	8	7																											
Demobilization	42	-	-	1	8	7																											
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																											

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19
												2018													2019							
							8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
West Connection Site (Shaft 5B)																															
Project 1: Shaft and Bypass Tunnel Construction																															
Phase 1: Site Preparation																															
Shaft 5B Site Preparation																															
Site Preparation Stage 1	28	-	-	1	12	6																									
Site Preparation Stage 2	38	-	-	1	12	6																									
Site Preparation Stage 3	57	57	-	2	8	6																									
Site Preparation Stage 4	50	50	-	2	8	6																									
Site Preparation Stage 5	42	42	-	2	8	6																									
Site Preparation Stage 6	42	-	-	1	12	6																									
Site Preparation Stage 7	42	-	-	1	12	6																									
Phase 2: Shaft Construction																															
Shaft 5B Construction																															
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5																									
Phase 3: Bypass Tunnel Excavation																															
5B Starter Tunnel																															
Excavation & Installation of Initial Support	48	42	42	3	8	5																									
Shaft 5B Connector Tunnel																															
Excavation & Installation of Initial Support	10	10	10	3	8	5																									
Innudation Plug																															
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																									
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																									
Bypass Tunnel Driving (TBM)																															
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5																									
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5																									
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5	62	62	62	62	62	62	62	62	62	62	62	62	62												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5														35											
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																															
Installation of Final Liner																															
Installation of Steel Liner	69	63	63	3	8	5															69	69	69	69	69	69	69	69	69	69	69
Installation of CIP against Steel Liner	42	36	36	3	8	5																									
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5																									
Installation of CIP against Starter Tunnel	48	42	42	3	8	5																									
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5																									
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA																									
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA																									
Installation of Shaft Plug and Distribution Chamber																															
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																									
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5																									
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA																									
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																															
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																									
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																									
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																									
Shaft 5B Connector Tunnel																															
Excavation & Installation of Initial Support	48	42	42	3	8	7																									
Junction Chamber																															
Excavation & Installation of Initial Support	48	42	42	3	8	7																									
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																									
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA																									
Installation of Final Liner																															
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																									
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA																									
Shaft 5B Operation or Post Construction																															
Overall Clean Up	42	-	-	1	8	7																									
Demobilization	42	-	-	1	8	7																									
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																									

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week
West Connection Site (Shaft 5B)						
Project 1: Shaft and Bypass Tunnel Construction						
Phase 1: Site Preparation						
Shaft 5B Site Preparation						
Site Preparation Stage 1	28	-	-	1	12	6
Site Preparation Stage 2	38	-	-	1	12	6
Site Preparation Stage 3	57	57	-	2	8	6
Site Preparation Stage 4	50	50	-	2	8	6
Site Preparation Stage 5	42	42	-	2	8	6
Site Preparation Stage 6	42	-	-	1	12	6
Site Preparation Stage 7	42	-	-	1	12	6
Phase 2: Shaft Construction						
Shaft 5B Construction						
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5
Phase 3: Bypass Tunnel Excavation						
5B Starter Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	5
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	10	10	10	3	8	5
Innudation Plug						
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5
Bypass Tunnel Driving (TBM)						
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2						
Installation of Final Liner						
Installation of Steel Liner	69	63	63	3	8	5
Installation of CIP against Steel Liner	42	36	36	3	8	5
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5
Installation of CIP against Starter Tunnel	48	42	42	3	8	5
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA
Installation of Shaft Plug and Distribution Chamber						
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing						
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Junction Chamber						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA
Installation of Final Liner						
Installation of CIP against Connector Tunnel	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA
Shaft 5B Operation or Post Construction						
Overall Clean Up	42	-	-	1	8	7
Demobilization	42	-	-	1	8	7
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA



Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15
							2013												2014															
							1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
East Connection Site (Shaft 6B)	**Day Workers**																																	
Project 1: Shaft and Bypass Tunnel Construction																																		
Phase 1: Site Preparation																																		
Shaft 6B Site Preparation																																		
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5	44	44																										
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5			44	44																								
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5					44	44																						
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5									44	44																		
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																												
Phase 2: Shaft Construction																																		
Shaft 6B Construction																																		
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5							48																					
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5								48	48																			
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5										48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Phase 3: Bypass Tunnel Excavation																																		
Shaft 6B Tunnel Excavation																																		
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5																												
Innudation Plug																																		
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																												
Final Grading and Paving	13	13	-	1	8	5																												
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																												
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																												
TBM Revmoal																																		
(TBM Tunneling) TBM Removal	45	39	39	3	8	5																												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																												
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																		
Installation of Final Liner																																		
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5																												
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																												
Installation of Shaft Plug and Distribution Chamber																																		
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																												
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																												
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																		
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																												
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																												
Shaft 6B Connector Tunnel																																		
Excavation & Installation of Initial Support	48	42	42	3	8	7																												
Junction Chamber																																		
Excavation & Installation of Initial Support	48	42	42	3	8	7																												
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																												
Installation of Final Liner																																		
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																												
Shaft 6B Operation or Post Construction																																		
Overall Clean Up	42	-	-	1	8	7																												
Demobilization	42	-	-	1	8	7																												
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																												
			Day Shift Total (West Shaft)				28	28	38	38	57	57	50	50	42	42	42	42	42	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
			Day Shift Total (East Shaft)				44	44	44	44	44	44	48	48	92	92	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
							2015								2016												2017						
							5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
East Connection Site (Shaft 6B)																																	
Project 1: Shaft and Bypass Tunnel Construction																																	
Phase 1: Site Preparation																																	
Shaft 6B Site Preparation																																	
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																											
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																											
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																											
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																											
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																											
Phase 2: Shaft Construction																																	
Shaft 6B Construction																																	
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5																											
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5																											
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5	48																										
Phase 3: Bypass Tunnel Excavation																																	
Shaft 6B Tunnel Excavation																																	
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5		48																									
Innudation Plug																																	
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5			13	13	13	13	13																				
Final Grading and Paving	13	13	-	1	8	5								13	13																		
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5										13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5										2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
TBM Revmoal																																	
(TBM Tunneling) TBM Removal	45	39	39	3	8	5																											
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																											
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																	
Installation of Final Liner																																	
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5																											
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																											
Installation of Shaft Plug and Distribution Chamber																																	
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																											
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																											
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																	
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																											
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																											
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																											
Shaft 6B Connector Tunnel																																	
Excavation & Installation of Initial Support	48	42	42	3	8	7																											
Junction Chamber																																	
Excavation & Installation of Initial Support	48	42	42	3	8	7																											
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																											
Installation of Final Liner																																	
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																											
Shaft 6B Operation or Post Construction																																	
Overall Clean Up	42	-	-	1	8	7																											
Demobilization	42	-	-	1	8	7																											
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																											
			Day Shift Total (West Shaft)				67	57	57	60	60	77	77	77	77	77	77	77	77	77	77	62	62	62	62	62	62	62	62	62	62	62	
			Day Shift Total (East Shaft)				48	48	13	13	13	13	13	13	13	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19
												2018												2019							
							8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
East Connection Site (Shaft 6B)																														
Project 1: Shaft and Bypass Tunnel Construction																														
Phase 1: Site Preparation																														
Shaft 6B Site Preparation																														
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																								
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																								
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																								
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																								
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																								
Phase 2: Shaft Construction																														
Shaft 6B Construction																														
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5																								
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5																								
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5																								
Phase 3: Bypass Tunnel Excavation																														
Shaft 6B Tunnel Excavation																														
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5																								
Innudation Plug																														
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																								
Final Grading and Paving	13	13	-	1	8	5																								
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																								
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																								
TBM Revmoal																														
(TBM Tunneling) TBM Removal	45	39	39	3	8	5													45											
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5														35										
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																														
Installation of Final Liner																														
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5															42									
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																42								
Installation of Shaft Plug and Distribution Chamber																														
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																	48							
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																		48						
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																														
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																								
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																								
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																								
Shaft 6B Connector Tunnel																														
Excavation & Installation of Initial Support	48	42	42	3	8	7																								
Junction Chamber																														
Excavation & Installation of Initial Support	48	42	42	3	8	7																								
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																								
Installation of Final Liner																														
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																								
Shaft 6B Operation or Post Construction																														
Overall Clean Up	42	-	-	1	8	7																								
Demobilization	42	-	-	1	8	7																								
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																								
			Day Shift Total (West Shaft)				62	62	62	62	62	62	62	62	62	62	62	62	62	35	69	69	69	69	69	69	69	69	69	69	69
			Day Shift Total (East Shaft)																45	35	42	42	48	48							

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
							9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
							2020																2021											
East Connection Site (Shaft 6B)																																		
Project 1: Shaft and Bypass Tunnel Construction																																		
Phase 1: Site Preparation																																		
Shaft 6B Site Preparation																																		
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																												
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																												
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																												
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																												
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																												
Phase 2: Shaft Construction																																		
Shaft 6B Construction																																		
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5																												
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5																												
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5																												
Phase 3: Bypass Tunnel Excavation																																		
Shaft 6B Tunnel Excavation																																		
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5																												
Innudation Plug																																		
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																												
Final Grading and Paving	13	13	-	1	8	5																												
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																												
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																												
TBM Revmoal																																		
(TBM Tunneling) TBM Removal	45	39	39	3	8	5																												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																												
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																		
Installation of Final Liner																																		
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5																												
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																												
Installation of Shaft Plug and Distribution Chamber																																		
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																												
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																												
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																		
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7														34	34													
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																												
Shaft 6B Connector Tunnel																																		
Excavation & Installation of Initial Support	48	42	42	3	8	7																48												
Junction Chamber																																		
Excavation & Installation of Initial Support	48	42	42	3	8	7																	48											
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																		48										
Installation of Final Liner																																		
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																			48									
Shaft 6B Operation or Post Construction																																		
Overall Clean Up	42	-	-	1	8	7																				42	42							
Demobilization	42	-	-	1	8	7																						42	42					
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																												
			Day Shift Total (West Shaft)				42	42	42	42	48	42	48	48						34	34	48	48	48	48	42	42	42	42						
			Day Shift Total (East Shaft)																	34	34	48	48	48	48	42	42	42	42						

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15
							2013												2014															
							1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
West Connection Site (Shaft 5B) - Afternoon Workers							Afternoon Workers																											
Project 1: Shaft and Bypass Tunnel Construction																																		
Phase 1: Site Preparation																																		
Shaft 5B Site Preparation																																		
Site Preparation Stage 1	28	-	-	1	12	6																												
Site Preparation Stage 2	38	-	-	1	12	6																												
Site Preparation Stage 3	57	57	-	2	8	6					57	57																						
Site Preparation Stage 4	50	50	-	2	8	6							50	50																				
Site Preparation Stage 5	42	42	-	2	8	6									42	42																		
Site Preparation Stage 6	42	-	-	1	12	6																												
Site Preparation Stage 7	42	-	-	1	12	6																												
Phase 2: Shaft Construction																																		
Shaft 5B Construction																																		
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5														42	42	42	42	42	42	42	42	42	42	42	42			
Phase 3: Bypass Tunnel Excavation																																		
5B Starter Tunnel																																		
Excavation & Installation of Initial Support	48	42	42	3	8	5																											42	42
Shaft 5B Connector Tunnel																																		
Excavation & Installation of Initial Support	10	10	10	3	8	5																												
Innudation Plug																																		
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																												
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																												
Bypass Tunnel Driving (TBM)																																		
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5																												
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5																												
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5																												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																												
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																		
Installation of Final Liner																																		
Installation of Steel Liner	69	63	63	3	8	5																												
Installation of CIP against Steel Liner	42	36	36	3	8	5																												
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5																												
Installation of CIP against Starter Tunnel	48	42	42	3	8	5																												
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5																												
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA																												
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA																												
Installation of Shaft Plug and Distribution Chamber																																		
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																												
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5																												
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA																												
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																		
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																												
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																												
Shaft 5B Connector Tunnel																																		
Excavation & Installation of Initial Support	48	42	42	3	8	7																												
Junction Chamber																																		
Excavation & Installation of Initial Support	48	42	42	3	8	7																												
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																												
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA																												
Installation of Final Liner																																		
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																												
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA																												
Shaft 5B Operation or Post Construction																																		
Overall Clean Up	42	-	-	1	8	7																												
Demobilization	42	-	-	1	8	7																												
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																												

Worker Projections

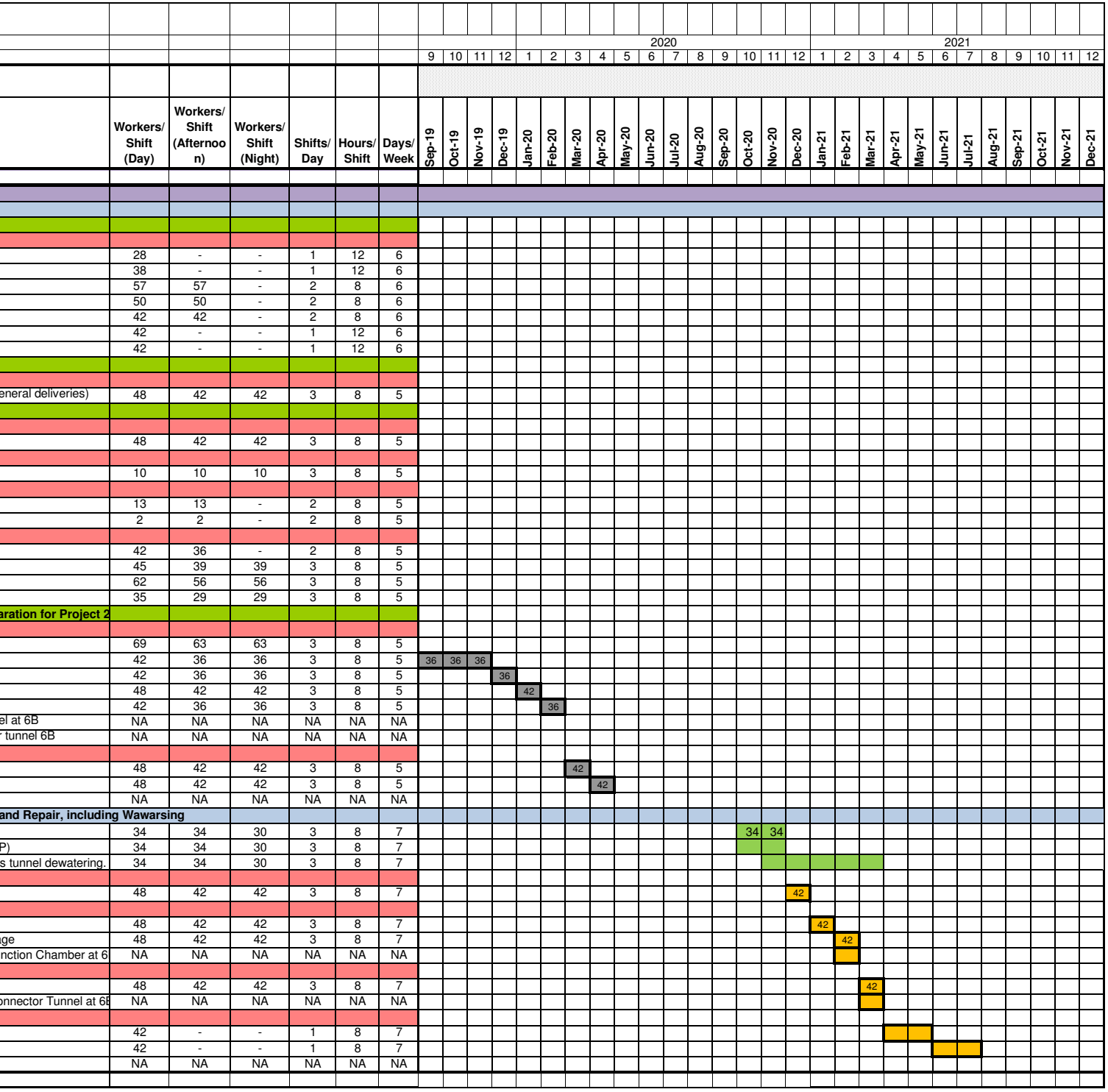
	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
							2015								2016												2017						
							5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
West Connection Site (Shaft 5B) - Afternoon Workers																																	
Project 1: Shaft and Bypass Tunnel Construction																																	
Phase 1: Site Preparation																																	
Shaft 5B Site Preparation																																	
Site Preparation Stage 1	28	-	-	1	12	6																											
Site Preparation Stage 2	38	-	-	1	12	6																											
Site Preparation Stage 3	57	57	-	2	8	6																											
Site Preparation Stage 4	50	50	-	2	8	6																											
Site Preparation Stage 5	42	42	-	2	8	6																											
Site Preparation Stage 6	42	-	-	1	12	6																											
Site Preparation Stage 7	42	-	-	1	12	6																											
Phase 2: Shaft Construction																																	
Shaft 5B Construction																																	
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5																											
Phase 3: Bypass Tunnel Excavation																																	
5B Starter Tunnel																																	
Excavation & Installation of Initial Support	48	42	42	3	8	5																											
Shaft 5B Connector Tunnel																																	
Excavation & Installation of Initial Support	10	10	10	3	8	5	10																										
Innudation Plug																																	
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13										
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2										
Bypass Tunnel Driving (TBM)																																	
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5	36	36	36																								
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5				39	39																						
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5						56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																											
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																	
Installation of Final Liner																																	
Installation of Steel Liner	69	63	63	3	8	5																											
Installation of CIP against Steel Liner	42	36	36	3	8	5																											
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5																											
Installation of CIP against Starter Tunnel	48	42	42	3	8	5																											
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5																											
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA																											
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA																											
Installation of Shaft Plug and Distribution Chamber																																	
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																											
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5																											
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA																											
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																																	
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																											
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																											
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																											
Shaft 5B Connector Tunnel																																	
Excavation & Installation of Initial Support	48	42	42	3	8	7																											
Junction Chamber																																	
Excavation & Installation of Initial Support	48	42	42	3	8	7																											
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																											
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6I	NA	NA	NA	NA	NA	NA																											
Installation of Final Liner																																	
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																											
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA																											
Shaft 5B Operation or Post Construction																																	
Overall Clean Up	42	-	-	1	8	7																											
Demobilization	42	-	-	1	8	7																											
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																											

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19
							8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
							2018																	2019							
West Connection Site (Shaft 5B) - Afternoon Workers																															
Project 1: Shaft and Bypass Tunnel Construction																															
Phase 1: Site Preparation																															
Shaft 5B Site Preparation																															
Site Preparation Stage 1	28	-	-	1	12	6																									
Site Preparation Stage 2	38	-	-	1	12	6																									
Site Preparation Stage 3	57	57	-	2	8	6																									
Site Preparation Stage 4	50	50	-	2	8	6																									
Site Preparation Stage 5	42	42	-	2	8	6																									
Site Preparation Stage 6	42	-	-	1	12	6																									
Site Preparation Stage 7	42	-	-	1	12	6																									
Phase 2: Shaft Construction																															
Shaft 5B Construction																															
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5																									
Phase 3: Bypass Tunnel Excavation																															
5B Starter Tunnel																															
Excavation & Installation of Initial Support	48	42	42	3	8	5																									
Shaft 5B Connector Tunnel																															
Excavation & Installation of Initial Support	10	10	10	3	8	5																									
Innudation Plug																															
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																									
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																									
Bypass Tunnel Driving (TBM)																															
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5																									
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5																									
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5	56	56	56	56	56	56	56	56	56	56	56	56	56												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5														29											
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																															
Installation of Final Liner																															
Installation of Steel Liner	69	63	63	3	8	5															63	63	63	63	63	63	63	63	63	63	63
Installation of CIP against Steel Liner	42	36	36	3	8	5																									
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5																									
Installation of CIP against Starter Tunnel	48	42	42	3	8	5																									
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5																									
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA																									
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA																									
Installation of Shaft Plug and Distribution Chamber																															
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																									
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5																									
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA																									
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																															
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																									
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																									
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																									
Shaft 5B Connector Tunnel																															
Excavation & Installation of Initial Support	48	42	42	3	8	7																									
Junction Chamber																															
Excavation & Installation of Initial Support	48	42	42	3	8	7																									
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																									
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA																									
Installation of Final Liner																															
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																									
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA																									
Shaft 5B Operation or Post Construction																															
Overall Clean Up	42	-	-	1	8	7																									
Demobilization	42	-	-	1	8	7																									
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																									

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week
West Connection Site (Shaft 5B) - Afternoon Workers						
Project 1: Shaft and Bypass Tunnel Construction						
Phase 1: Site Preparation						
Shaft 5B Site Preparation						
Site Preparation Stage 1	28	-	-	1	12	6
Site Preparation Stage 2	38	-	-	1	12	6
Site Preparation Stage 3	57	57	-	2	8	6
Site Preparation Stage 4	50	50	-	2	8	6
Site Preparation Stage 5	42	42	-	2	8	6
Site Preparation Stage 6	42	-	-	1	12	6
Site Preparation Stage 7	42	-	-	1	12	6
Phase 2: Shaft Construction						
Shaft 5B Construction						
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5
Phase 3: Bypass Tunnel Excavation						
5B Starter Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	5
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	10	10	10	3	8	5
Innudation Plug						
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5
Bypass Tunnel Driving (TBM)						
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2						
Installation of Final Liner						
Installation of Steel Liner	69	63	63	3	8	5
Installation of CIP against Steel Liner	42	36	36	3	8	5
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5
Installation of CIP against Starter Tunnel	48	42	42	3	8	5
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA
Installation of Shaft Plug and Distribution Chamber						
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing						
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Junction Chamber						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA
Installation of Final Liner						
Installation of CIP against Connector Tunnel	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA
Shaft 5B Operation or Post Construction						
Overall Clean Up	42	-	-	1	8	7
Demobilization	42	-	-	1	8	7
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA



Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15
							2013												2014															
							1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
East Connection Site (Shaft 6B)	**Afternoon Workers**																																	
Project 1: Shaft and Bypass Tunnel Construction																																		
Phase 1: Site Preparation																																		
Shaft 6B Site Preparation																																		
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																												
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																												
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																												
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																												
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																												
Phase 2: Shaft Construction																																		
Shaft 6B Construction																																		
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5							42																					
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5								42																				
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5									42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
Phase 3: Bypass Tunnel Excavation																																		
Shaft 6B Tunnel Excavation																																		
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5																												
Innudation Plug																																		
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																												
Final Grading and Paving	13	13	-	1	8	5																												
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																												
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																												
TBM Revmoal																																		
(TBM Tunneling) TBM Removal	45	39	39	3	8	5																												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																												
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																		
Installation of Final Liner																																		
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5																												
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																												
Installation of Shaft Plug and Distribution Chamber																																		
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																												
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																												
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, includir																																		
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																												
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																												
Shaft 6B Connector Tunnel	48	42	42	3	8	7																												
Excavation & Installation of Initial Support																																		
Junction Chamber	48	42	42	3	8	7																												
Excavation & Installation of Initial Support	48	42	42	3	8	7																												
Backfilling of Junction Chamber (includes) installation of steel grillage																																		
Installation of Final Liner	48	42	42	3	8	7																												
Installation of CIP against Connector Tunnel																																		
Shaft 6B Operation or Post Construction	42	-	-	1	8	7																												
Overall Clean Up	42	-	-	1	8	7																												
Demobilization	NA	NA	NA	NA	NA	NA																												
Potable Water and Sanitation Removal																																		
Afternoon Shift Total (West Shaft)											57	57	50	50	42	42				42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
Afternoon Shift Total (East Shaft)													42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
							2015								2016												2017						
							5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
East Connection Site (Shaft 6B)																																	
Project 1: Shaft and Bypass Tunnel Construction																																	
Phase 1: Site Preparation																																	
Shaft 6B Site Preparation																																	
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																											
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																											
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																											
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																											
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																											
Phase 2: Shaft Construction																																	
Shaft 6B Construction																																	
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5																											
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5																											
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5	42																										
Phase 3: Bypass Tunnel Excavation																																	
Shaft 6B Tunnel Excavation																																	
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5		42																									
Innudation Plug																																	
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																											
Final Grading and Paving	13	13	-	1	8	5																											
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5										13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5										2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
TBM Revmoal																																	
(TBM Tunneling) TBM Removal	45	39	39	3	8	5																											
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																											
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																	
Installation of Final Liner																																	
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5																											
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																											
Installation of Shaft Plug and Distribution Chamber																																	
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																											
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																											
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, includir																																	
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																											
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																											
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																											
Shaft 6B Connector Tunnel	48	42	42	3	8	7																											
Excavation & Installation of Initial Support																																	
Junction Chamber	48	42	42	3	8	7																											
Excavation & Installation of Initial Support	48	42	42	3	8	7																											
Backfilling of Junction Chamber (includes) installation of steel grillage																																	
Installation of Final Liner	48	42	42	3	8	7																											
Installation of CIP against Connector Tunnel																																	
Shaft 6B Operation or Post Construction	42	-	-	1	8	7																											
Overall Clean Up	42	-	-	1	8	7																											
Demobilization	NA	NA	NA	NA	NA	NA																											
Potable Water and Sanitation Removal																																	
			Afternoon Shift Total (West Shaft)				61	51	51	54	54	71	71	71	71	71	71	71	71	71	71	71	56	56	56	56	56	56	56	56	56	56	
			Afternoon Shift Total (East Shaft)				42	42								15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15			

Worker Projections

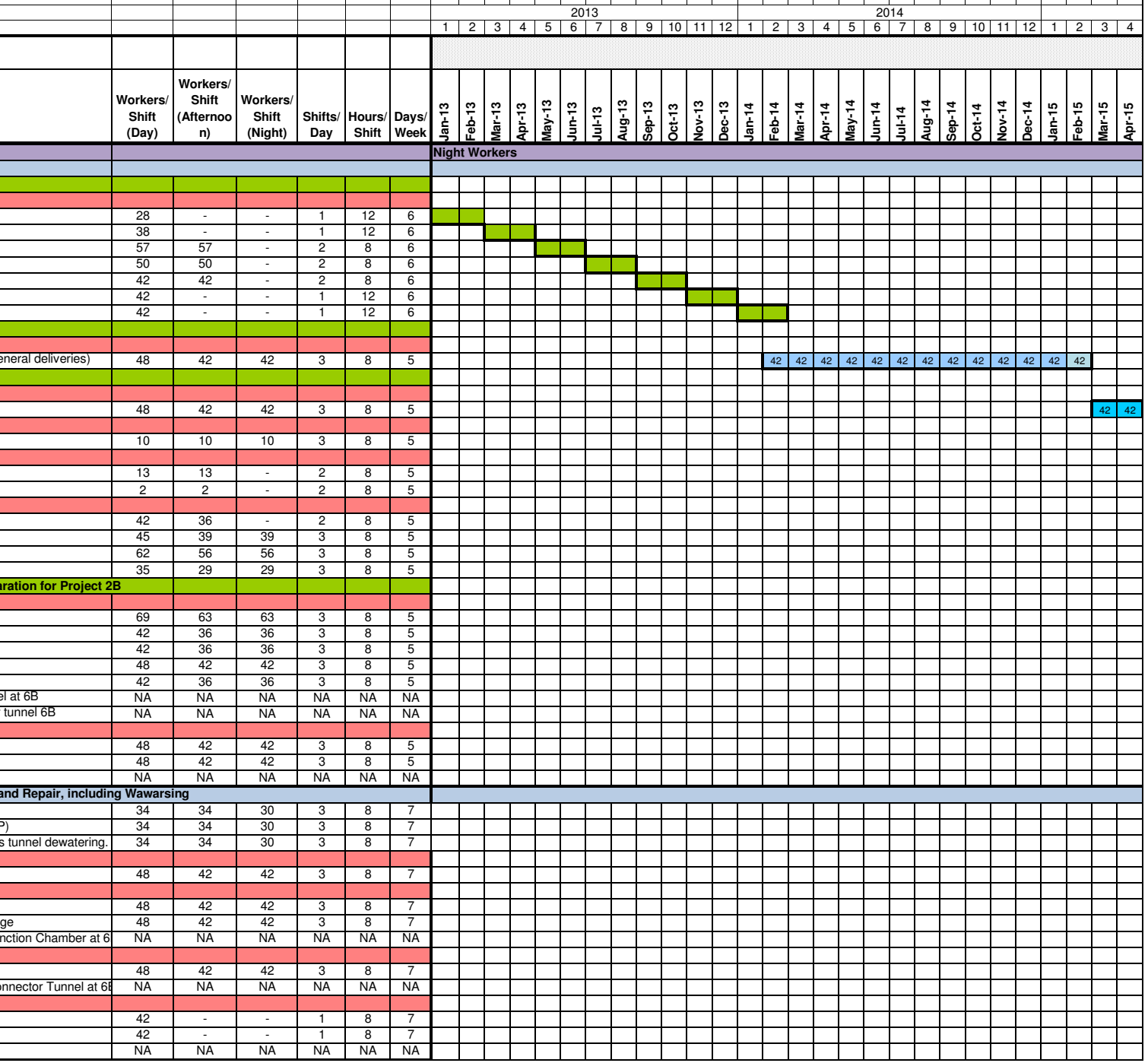
	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19
												2018												2019							
							8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
East Connection Site (Shaft 6B)																														
Project 1: Shaft and Bypass Tunnel Construction																														
Phase 1: Site Preparation																														
Shaft 6B Site Preparation																														
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																								
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																								
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																								
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																								
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																								
Phase 2: Shaft Construction																														
Shaft 6B Construction																														
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5																								
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5																								
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5																								
Phase 3: Bypass Tunnel Excavation																														
Shaft 6B Tunnel Excavation																														
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5																								
Innudation Plug																														
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																								
Final Grading and Paving	13	13	-	1	8	5																								
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																								
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																								
TBM Revmoal																														
(TBM Tunneling) TBM Removal	45	39	39	3	8	5													39											
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5														29										
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																														
Installation of Final Liner																														
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5															36									
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																36								
Installation of Shaft Plug and Distribution Chamber																														
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																	42							
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																		42						
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, includir																														
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																								
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																								
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																								
Shaft 6B Connector Tunnel	48	42	42	3	8	7																								
Excavation & Installation of Initial Support																														
Junction Chamber	48	42	42	3	8	7																								
Excavation & Installation of Initial Support	48	42	42	3	8	7																								
Backfilling of Junction Chamber (includes) installation of steel grillage																														
Installation of Final Liner	48	42	42	3	8	7																								
Installation of CIP against Connector Tunnel																														
Shaft 6B Operation or Post Construction	42	-	-	1	8	7																								
Overall Clean Up	42	-	-	1	8	7																								
Demobilization	NA	NA	NA	NA	NA	NA																								
Potable Water and Sanitation Removal																														
Afternoon Shift Total (West Shaft)							56	56	56	56	56	56	56	56	56	56	56	56	56	29	63	63	63	63	63	63	63	63	63	63	63
Afternoon Shift Total (East Shaft)																			39	29	36	36	42	42						

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
							9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
							2020																2021											
East Connection Site (Shaft 6B)																																		
Project 1: Shaft and Bypass Tunnel Construction																																		
Phase 1: Site Preparation																																		
Shaft 6B Site Preparation																																		
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																												
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																												
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																												
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																												
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																												
Phase 2: Shaft Construction																																		
Shaft 6B Construction																																		
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5																												
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5																												
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5																												
Phase 3: Bypass Tunnel Excavation																																		
Shaft 6B Tunnel Excavation																																		
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5																												
Innudation Plug																																		
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																												
Final Grading and Paving	13	13	-	1	8	5																												
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																												
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																												
TBM Revmoal																																		
(TBM Tunneling) TBM Removal	45	39	39	3	8	5																												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																												
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																		
Installation of Final Liner																																		
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5																												
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																												
Installation of Shaft Plug and Distribution Chamber																																		
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																												
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																												
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, includir																																		
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7														34	34													
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																												
Shaft 6B Connector Tunnel	48	42	42	3	8	7																												
Excavation & Installation of Initial Support																						42												
Junction Chamber	48	42	42	3	8	7																												
Excavation & Installation of Initial Support	48	42	42	3	8	7																	42											
Backfilling of Junction Chamber (includes) installation of steel grillage																								42										
Installation of Final Liner	48	42	42	3	8	7																												
Installation of CIP against Connector Tunnel																									42									
Shaft 6B Operation or Post Construction	42	-	-	1	8	7																												
Overall Clean Up	42	-	-	1	8	7																												
Demobilization	NA	NA	NA	NA	NA	NA																												
Potable Water and Sanitation Removal																																		
Afternoon Shift Total (West Shaft)							36	36	36	36	42	36	42	42						34	34	42	42	42	42									
Afternoon Shift Total (East Shaft)																				34	34	42	42	42	42									

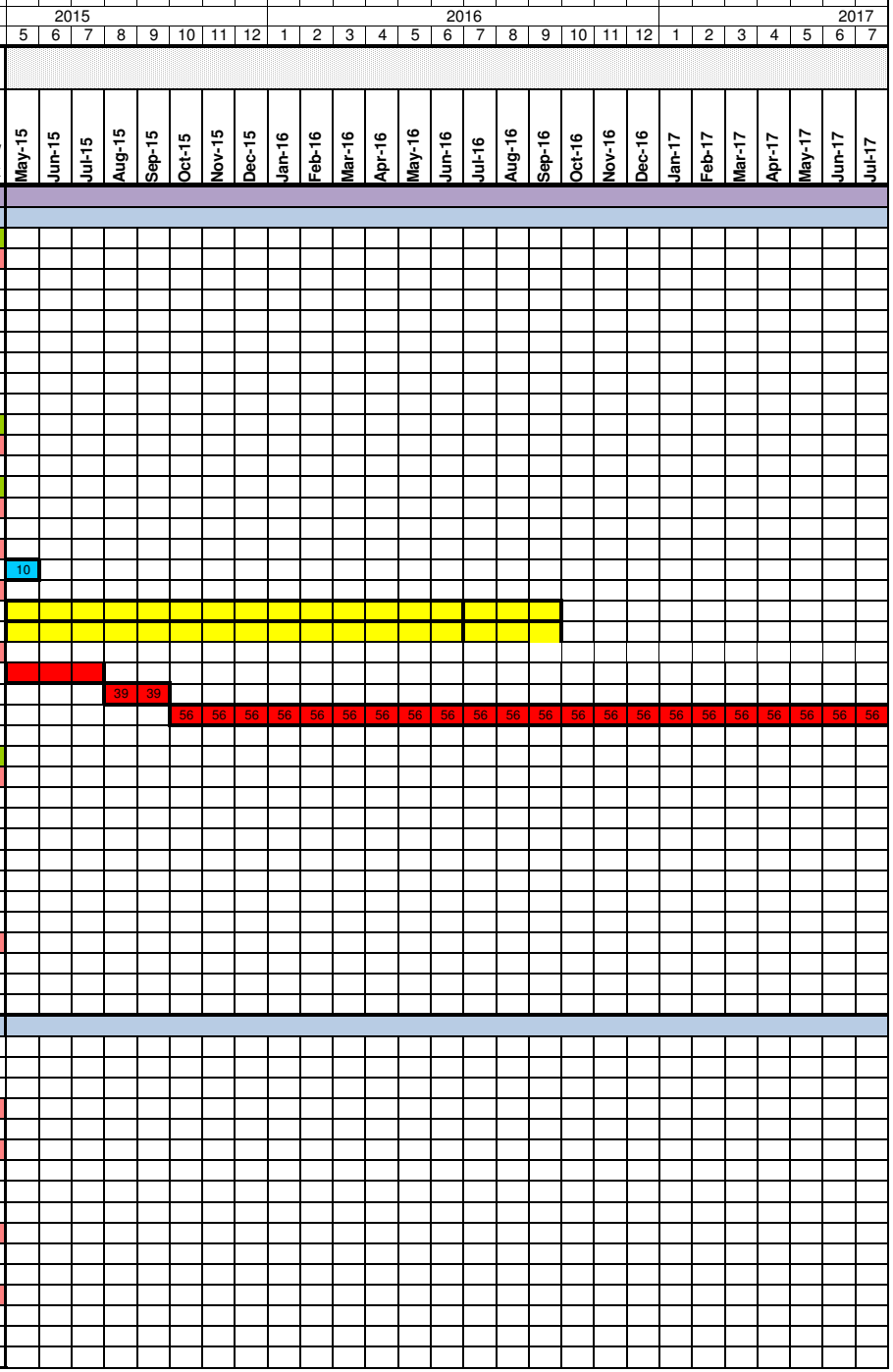
Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week
West Connection Site (Shaft 5B)						
Project 1: Shaft and Bypass Tunnel Construction						
Phase 1: Site Preparation						
Shaft 5B Site Preparation						
Site Preparation Stage 1	28	-	-	1	12	6
Site Preparation Stage 2	38	-	-	1	12	6
Site Preparation Stage 3	57	57	-	2	8	6
Site Preparation Stage 4	50	50	-	2	8	6
Site Preparation Stage 5	42	42	-	2	8	6
Site Preparation Stage 6	42	-	-	1	12	6
Site Preparation Stage 7	42	-	-	1	12	6
Phase 2: Shaft Construction						
Shaft 5B Construction						
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5
Phase 3: Bypass Tunnel Excavation						
5B Starter Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	5
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	10	10	10	3	8	5
Innudation Plug						
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5
Bypass Tunnel Driving (TBM)						
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B						
Installation of Final Liner						
Installation of Steel Liner	69	63	63	3	8	5
Installation of CIP against Steel Liner	42	36	36	3	8	5
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5
Installation of CIP against Starter Tunnel	48	42	42	3	8	5
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA
Installation of Shaft Plug and Distribution Chamber						
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing						
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Junction Chamber						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA
Installation of Final Liner						
Installation of CIP against Connector Tunnel	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6B	NA	NA	NA	NA	NA	NA
Shaft 5B Operation or Post Construction						
Overall Clean Up	42	-	-	1	8	7
Demobilization	42	-	-	1	8	7
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA



Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week
West Connection Site (Shaft 5B)						
Project 1: Shaft and Bypass Tunnel Construction						
Phase 1: Site Preparation						
Shaft 5B Site Preparation						
Site Preparation Stage 1	28	-	-	1	12	6
Site Preparation Stage 2	38	-	-	1	12	6
Site Preparation Stage 3	57	57	-	2	8	6
Site Preparation Stage 4	50	50	-	2	8	6
Site Preparation Stage 5	42	42	-	2	8	6
Site Preparation Stage 6	42	-	-	1	12	6
Site Preparation Stage 7	42	-	-	1	12	6
Phase 2: Shaft Construction						
Shaft 5B Construction						
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5
Phase 3: Bypass Tunnel Excavation						
5B Starter Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	5
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	10	10	10	3	8	5
Innudation Plug						
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5
Bypass Tunnel Driving (TBM)						
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B						
Installation of Final Liner						
Installation of Steel Liner	69	63	63	3	8	5
Installation of CIP against Steel Liner	42	36	36	3	8	5
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5
Installation of CIP against Starter Tunnel	48	42	42	3	8	5
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA
Installation of Shaft Plug and Distribution Chamber						
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing						
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Junction Chamber						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA
Installation of Final Liner						
Installation of CIP against Connector Tunnel	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA
Shaft 5B Operation or Post Construction						
Overall Clean Up	42	-	-	1	8	7
Demobilization	42	-	-	1	8	7
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA

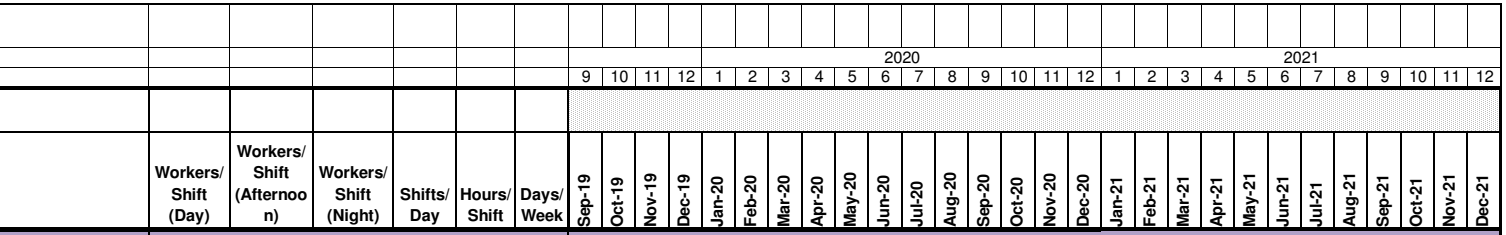


Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19
												2018													2019							
							8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
West Connection Site (Shaft 5B)																															
Project 1: Shaft and Bypass Tunnel Construction																															
Phase 1: Site Preparation																															
Shaft 5B Site Preparation																															
Site Preparation Stage 1	28	-	-	1	12	6																									
Site Preparation Stage 2	38	-	-	1	12	6																									
Site Preparation Stage 3	57	57	-	2	8	6																									
Site Preparation Stage 4	50	50	-	2	8	6																									
Site Preparation Stage 5	42	42	-	2	8	6																									
Site Preparation Stage 6	42	-	-	1	12	6																									
Site Preparation Stage 7	42	-	-	1	12	6																									
Phase 2: Shaft Construction																															
Shaft 5B Construction																															
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5																									
Phase 3: Bypass Tunnel Excavation																															
5B Starter Tunnel																															
Excavation & Installation of Initial Support	48	42	42	3	8	5																									
Shaft 5B Connector Tunnel																															
Excavation & Installation of Initial Support	10	10	10	3	8	5																									
Innudation Plug																															
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																									
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																									
Bypass Tunnel Driving (TBM)																															
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5																									
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5																									
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5	56	56	56	56	56	56	56	56	56	56	56	56	56												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5														29											
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B																															
Installation of Final Liner																															
Installation of Steel Liner	69	63	63	3	8	5															63	63	63	63	63	63	63	63	63	63	63
Installation of CIP against Steel Liner	42	36	36	3	8	5																									
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5																									
Installation of CIP against Starter Tunnel	48	42	42	3	8	5																									
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5																									
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA																									
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA																									
Installation of Shaft Plug and Distribution Chamber																															
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																									
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5																									
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA																									
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing																															
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																									
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																									
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																									
Shaft 5B Connector Tunnel																															
Excavation & Installation of Initial Support	48	42	42	3	8	7																									
Junction Chamber																															
Excavation & Installation of Initial Support	48	42	42	3	8	7																									
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7																									
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA																									
Installation of Final Liner																															
Installation of CIP against Connector Tunnel	48	42	42	3	8	7																									
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA																									
Shaft 5B Operation or Post Construction																															
Overall Clean Up	42	-	-	1	8	7																									
Demobilization	42	-	-	1	8	7																									
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA																									

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week
West Connection Site (Shaft 5B)						
Project 1: Shaft and Bypass Tunnel Construction						
Phase 1: Site Preparation						
Shaft 5B Site Preparation						
Site Preparation Stage 1	28	-	-	1	12	6
Site Preparation Stage 2	38	-	-	1	12	6
Site Preparation Stage 3	57	57	-	2	8	6
Site Preparation Stage 4	50	50	-	2	8	6
Site Preparation Stage 5	42	42	-	2	8	6
Site Preparation Stage 6	42	-	-	1	12	6
Site Preparation Stage 7	42	-	-	1	12	6
Phase 2: Shaft Construction						
Shaft 5B Construction						
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)	48	42	42	3	8	5
Phase 3: Bypass Tunnel Excavation						
5B Starter Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	5
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	10	10	10	3	8	5
Innudation Plug						
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5
Bypass Tunnel Driving (TBM)						
(TBM Tunneling) Mobilization Surface Works	42	36	-	2	8	5
(TBM Tunneling) Erect TBM Underground	45	39	39	3	8	5
(TBM Tunneling) Tunnel Excavation and Lining	62	56	56	3	8	5
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2B						
Installation of Final Liner						
Installation of Steel Liner	69	63	63	3	8	5
Installation of CIP against Steel Liner	42	36	36	3	8	5
Installation of CIP against TBM Tunnel (Westside)	42	36	36	3	8	5
Installation of CIP against Starter Tunnel	48	42	42	3	8	5
Installation of CIP liner against Connector Tunnel - 5B	42	36	36	3	8	5
Raw Materials & Concrete Delivery for CIP liner against TBM tunnel at 6B	NA	NA	NA	NA	NA	NA
Raw Materials & Concrete Delivery for CIP liner against Connector tunnel 6B	NA	NA	NA	NA	NA	NA
Installation of Shaft Plug and Distribution Chamber						
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5
Excavation and Final Lining of Distribution Chamber	48	42	42	3	8	5
Raw Materials (IN) & Concrete Delivery (OUT) for Plug at 6B	NA	NA	NA	NA	NA	NA
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, including Wawarsing						
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7
Shaft 5B Connector Tunnel						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Junction Chamber						
Excavation & Installation of Initial Support	48	42	42	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillage	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Junction Chamber at 6	NA	NA	NA	NA	NA	NA
Installation of Final Liner						
Installation of CIP against Connector Tunnel	48	42	42	3	8	7
Raw Materials (IN) & Concrete Delivery (OUT) for Final Liner of Connector Tunnel at 6E	NA	NA	NA	NA	NA	NA
Shaft 5B Operation or Post Construction						
Overall Clean Up	42	-	-	1	8	7
Demobilization	42	-	-	1	8	7
Potable Water and Sanitation Removal	NA	NA	NA	NA	NA	NA



Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week
East Connection Site (Shaft 6B)	**Night Workers**					
Project 1: Shaft and Bypass Tunnel Construction						
Phase 1: Site Preparation						
Shaft 6B Site Preparation						
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5
Phase 2: Shaft Construction						
Shaft 6B Construction						
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5
Phase 3: Bypass Tunnel Excavation						
Shaft 6B Tunnel Excavation						
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5
Innudation Plug						
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5
Final Grading and Paving	13	13	-	1	8	5
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5
TBM Revmoal						
(TBM Tunneling) TBM Removal	45	39	39	3	8	5
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2						
Installation of Final Liner						
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5
Installation of Shaft Plug and Distribution Chamber						
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, includir						
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7
Shaft 6B Connector Tunnel	48	42	42	3	8	7
Excavation & Installation of Initial Support						
Junction Chamber	48	42	42	3	8	7
Excavation & Installation of Initial Support	48	42	42	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillage						
Installation of Final Liner	48	42	42	3	8	7
Installation of CIP against Connector Tunnel						
Shaft 6B Operation or Post Construction	42	-	-	1	8	7
Overall Clean Up	42	-	-	1	8	7
Demobilization	NA	NA	NA	NA	NA	NA
Potable Water and Sanitation Removal						

	2013												2014															
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15
Night Shift Total (West Shaft)													42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
Night Shift Total (East Shaft)																												
Daily Workers Total (West Shaft)	28	28	38	38	114	114	100	100	84	84	42	42	42	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132
Daily Workers Total (East Shaft)	44	44	44	44	44	44	90	90	134	134	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week
East Connection Site (Shaft 6B)						
Project 1: Shaft and Bypass Tunnel Construction						
Phase 1: Site Preparation						
Shaft 6B Site Preparation						
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5
Phase 2: Shaft Construction						
Shaft 6B Construction						
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5
Phase 3: Bypass Tunnel Excavation						
Shaft 6B Tunnel Excavation						
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5
Innudation Plug						
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5
Final Grading and Paving	13	13	-	1	8	5
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5
TBM Revmoal						
(TBM Tunneling) TBM Removal	45	39	39	3	8	5
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2						
Installation of Final Liner						
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5
Installation of Shaft Plug and Distribution Chamber						
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, includir						
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7
Shaft 6B Connector Tunnel	48	42	42	3	8	7
Excavation & Installation of Initial Support						
Junction Chamber	48	42	42	3	8	7
Excavation & Installation of Initial Support	48	42	42	3	8	7
Backfilling of Junction Chamber (includes) installation of steel grillage						
Installation of Final Liner	48	42	42	3	8	7
Installation of CIP against Connector Tunnel						
Shaft 6B Operation or Post Construction	42	-	-	1	8	7
Overall Clean Up	42	-	-	1	8	7
Demobilization	NA	NA	NA	NA	NA	NA
Potable Water and Sanitation Removal						

	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17
Night Shift Total (West Shaft)	10			39	39	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
Night Shift Total (East Shaft)		42																									
Daily Workers Total (West Shaft)	138	108	108	153	153	204	204	204	204	204	204	204	204	204	204	204	189	174	174	174	174	174	174	174	174	174	174
Daily Workers Total (East Shaft)	90	132	13	13	13	13	13	13	13	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19
							8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
							2018																	2019							
East Connection Site (Shaft 6B)																														
Project 1: Shaft and Bypass Tunnel Construction																														
Phase 1: Site Preparation																														
Shaft 6B Site Preparation																														
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																								
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																								
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																								
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																								
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																								
Phase 2: Shaft Construction																														
Shaft 6B Construction																														
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5																								
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5																								
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5																								
Phase 3: Bypass Tunnel Excavation																														
Shaft 6B Tunnel Excavation																														
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5																								
Innudation Plug																														
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																								
Final Grading and Paving	13	13	-	1	8	5																								
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																								
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																								
TBM Revmoal																														
(TBM Tunneling) TBM Removal	45	39	39	3	8	5													39											
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5														29										
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																														
Installation of Final Liner																														
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5															36									
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																36								
Installation of Shaft Plug and Distribution Chamber																														
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																	42							
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																		42						
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, includir																														
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7																								
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																								
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																								
Shaft 6B Connector Tunnel	48	42	42	3	8	7																								
Excavation & Installation of Initial Support																														
Junction Chamber	48	42	42	3	8	7																								
Excavation & Installation of Initial Support	48	42	42	3	8	7																								
Backfilling of Junction Chamber (includes) installation of steel grillage																														
Installation of Final Liner	48	42	42	3	8	7																								
Installation of CIP against Connector Tunnel																														
Shaft 6B Operation or Post Construction	42	-	-	1	8	7																								
Overall Clean Up	42	-	-	1	8	7																								
Demobilization	NA	NA	NA	NA	NA	NA																								
Potable Water and Sanitation Removal																														
			NIght Shift Total (West Shaft)				56	56	56	56	56	56	56	56	56	56	56	56	56	29	63	63	63	63	63	63	63	63	63	63	63
			Night Shift Total (East Shaft)																39	29	36	36	42	42							
			Daily Workers Total (West Shaft)				174	174	174	174	174	174	174	174	174	174	174	174	174	93	195	195	195	195	195	195	195	195	195	195	195
			Daily Workers Total (East Shaft)																123	93	114	114	132	132							

Worker Projections

	Workers/ Shift (Day)	Workers/ Shift (Afternoon)	Workers/ Shift (Night)	Shifts/ Day	Hours/ Shift	Days/ Week	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
							9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
							2020																2021											
East Connection Site (Shaft 6B)																																		
Project 1: Shaft and Bypass Tunnel Construction																																		
Phase 1: Site Preparation																																		
Shaft 6B Site Preparation																																		
Site Preparation Stage 1 - Tree Cutting/Clearing	44	-	-	1	8	5																												
Site Preparation Stage 2 - Install Fence/Excavate Sediment Basin/Manholes	44	-	-	1	8	5																												
Site Preparation Stage 3 - Grubbing/Stripping/Rough Grading	44	-	-	1	8	5																												
Site Preparation Stage 4 - Final Grading/Roadway	44	-	-	1	8	5																												
Site Preparation Stage 5 - Installation of Offices	44	-	-	1	8	5																												
Phase 2: Shaft Construction																																		
Shaft 6B Construction																																		
Stage 1 - Secant Piles (June to mid-July)	48	42	-	2	8	5																												
Stage 2 - Excavation and Lining of Shaft in Soil (mid-July to August)	48	42	-	2	8	5																												
Stage 3 - Excavation, Initial support, shaft lining in rock (includes general deliveries)	48	42	-	2	8	5																												
Phase 3: Bypass Tunnel Excavation																																		
Shaft 6B Tunnel Excavation																																		
Connector Tunnel (Mucking and Initial Support)	48	42	42	3	8	5																												
Innudation Plug																																		
Grabbing/Stripping/Rough Grading	13	13	-	1	8	5																												
Final Grading and Paving	13	13	-	1	8	5																												
Inundation Plug Construction - Plug Hole Construction (With BOP)	13	13	-	2	8	5																												
Inundation Plug Construction - Pump Shaft Construction	2	2	-	2	8	5																												
TBM Revmoal																																		
(TBM Tunneling) TBM Removal	45	39	39	3	8	5																												
(TBM Tunneling) Tunnel Clean Up	35	29	29	3	8	5																												
Phase 4: Bypass Tunnel Lining/Project 1 Demobilization/Preparation for Project 2																																		
Installation of Final Liner																																		
Installation of CIP against TBM Tunnel (Eastside)	42	36	36	3	8	5																												
Installation of CIP liner against Connector Tunnel - 6B	42	36	36	3	8	5																												
Installation of Shaft Plug and Distribution Chamber																																		
Construction of Mass Concrete Shaft Plug	48	42	42	3	8	5																												
Excavation and Final LIning of Distribution Chamber	48	42	42	3	8	5																												
Project 2B: Bypass Tunnel Connection and RWBT Inspection and Repair, includir																																		
Inundation Plug Construction - Plug Hole Construction (With BOP)	34	34	30	3	8	7														30	30													
Inundation Plug Construction - Pump Shaft Construction (With BOP)	34	34	30	3	8	7																												
Placement of Pea Gravel and Tremie Concrete Plug. Also includes tunnel dewatering.	34	34	30	3	8	7																												
Shaft 6B Connector Tunnel	48	42	42	3	8	7																												
Excavation & Installation of Initial Support																						42												
Junction Chamber	48	42	42	3	8	7																												
Excavation & Installation of Initial Support	48	42	42	3	8	7																	42											
Backfilling of Junction Chamber (includes) installation of steel grillage																								42										
Installation of Final Liner	48	42	42	3	8	7																												
Installation of CIP against Connector Tunnel																									42									
Shaft 6B Operation or Post Construction	42	-	-	1	8	7																												
Overall Clean Up	42	-	-	1	8	7																												
Demobilization	NA	NA	NA	NA	NA	NA																												
Potable Water and Sanitation Removal																																		
			NIght Shift Total (West Shaft)				36	36	36	36	42	36	42	42						30	30	42	42	42	42										
			Night Shift Total (East Shaft)																	30	30	42	42	42	42										
			Daily Workers Total (West Shaft)				114	114	114	114	132	114	132	132						98	98	132	132	132	132	42	42	42	42						
			Daily Workers Total (East Shaft)																	98	98	132	132	132	132	42	42	42	42						

Equipment List

Equipment List

Resource	Equipment Model Assumption	Engine Type (Assumed)	Estimated Horsepower	Location	Shaft Site
100000 lbs Winch	Ingersoll Rand HA2-050M	Air	9.4	Above Ground	East Only
12 Yard Concrete Mixer	Peterbilt 365	Diesel	455	Above Ground	East & West
150000 lb Winch	Ingersoll Rand HA3-075M	Air	25	Above Ground	East Only
20 Yard Dump Truck	Kenworth T800	Diesel	525	Above Ground	East & West
30 Yard Dump Truck	Kenworth W900B	Diesel	475	Above Ground	East & West
50T Crane	Liebherr LTM 1050-3.1	Diesel	367	Above Ground	West Only
Asphalt Flow Boy	Flow Boy 3064	Diesel	425	Above Ground	East & West
Bobcat	S160 Skid Steer Loader	Diesel	61	**Below Ground**	East & West
Boom Truck	Manitowoc 900A	Diesel	300	Above Ground	East & West
Box Truck	Chevrolet Express 3500	Diesel	325	Above Ground	East & West
Bulldozer	Caterpillar D8T	Diesel	310	Above Ground	East & West
Cement Tanker	CSC Bulk Cement Trans DFL 1311A1	Diesel	300	Above Ground	West Only
Chipper	Vermeer WC2300	Diesel	440	Above Ground	East & West
Compressor	Sullair 750H	Diesel	275	**Above Ground/Below Ground during Tunnel Excavation, Tunnel Lining, and Project II connection**	East & West
Concrete Pumps	Putzmeister TK 60 HP[2]	Diesel	131	Above Ground	East & West
Concrete Truck	2003 STERLING LT8513	Diesel	300	Above Ground	East & West
Crane	Terex T750 Truck Crane	Diesel	500	Above Ground	East & West
Crawler Dozer	John Deere 770J	Diesel	115	Above Ground	East & West
Drill Jumbo	Sandvik DT920i	Diesel	241	**Above Ground/Below Ground during Tunnel Excavation and Project II conenction**	East & West
Drill Rigs	Schramm T130XD	Diesel	760	Above Ground	East & West
Excavator	Liebherr R 934 C LItronic	Diesel	195	Above Ground	East & West
Excavator-SP	John Deere 450D LC	Diesel	348	Above Ground	East & West
Flat Truck	Ford F-650	Diesel	250	Above Ground	East & West
Fork Lift	Caterpillar P20000	Diesel	148	Above Ground	East & West
Front End Loader	Caterpillar 950H	Diesel	197	Above Ground	East & West
Fuel Tanker	Kenworth T-370, Paccar PX-8	Diesel	300	Above Ground	West Only
Fuel Truck	Freightliner FL-80	Diesel	300	Above Ground	East & West
Generator	Caterpillar XQ 45	Diesel	96	Above Ground	East & West
Generators	Terex T360	Diesel	426	**Above Ground/Below Ground during most of the Tunnel Excavation and Tunnel Lining work and during Project II connection**	East & West
Grader	John Deere 770G/GP	Diesel	245	Above Ground	East & West
Grout Mixers	Chemgrout CGMIX128/E	Electric		Above Ground	West Only
Grout Pumps	Putzmeister TK 60 HP[2]	Diesel	131	Above Ground	West Only
Harvester	John Deere 759H	Diesel	241	Above Ground	East & West
Hydraulic Winches	Ingersoll Rand LC2H500Q	electric		Above Ground	East & West
Hydroseeder	FINN Model T120 Hydroseeder	Diesel	35	Above Ground	East & West
Loaders	Caterpillar 950H	Diesel	197	Above Ground	East & West
Loco	Brookville Tunneling Locomotive	Diesel	100	**Below Ground**	East & West
Log Hauler	Kenworth 900B W/Log Hauler	Diesel	500	Above Ground	East & West
Paver	Caterpillar AP-1000D	Diesel	224	Above Ground	East & West
PB Winch	Timberland E780 General Purpose Winch	Air		Above Ground	East & West
Pickup Truck	Ford F-150	Diesel	365	Above Ground	East & West
Pile Driver	ABI Excavator Mounted Driver Model HVR 75	Diesel	200	Above Ground	West Only
Piling Rig	Bauer. BG 12H Rotary Drilling Rig. Base Carrier BT35.	Diesel	205	Above Ground	East Only
Potable Water Truck	Freightliner FL-80	Diesel	300	Above Ground	East & West
Pump	Tsurumi TE3-100HA	Gasoline	8	**Above Ground/Below Ground during Tunnel Excavation**	East & West
Pump	Honda WT40X	Gasoline	11	Above Ground	East & West
Rack Truck	Ford F-350/Whitney Racks	Diesel	385	Above Ground	East & West
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker	Diesel	348	Above Ground	West Only
Rock Crusher	McCloskey MCB C50	Diesel	350	Above Ground	West Only
Rock Cutter	Vermeer T955	Diesel	415	Above Ground	West Only
Rock Drill/Excavator	TEI HEM Excavator Drill	Diesel	348	Above Ground	West Only
Roller	Caterpillar CB34 XW	Diesel	46	Above Ground	East & West
Semi-Trailer Truck	Freightliner CA113DC	Diesel	450	Above Ground	West Only
Shaft Crane	Liebherr LTM 1200-5.1	Diesel	496	Above Ground	East & West
Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	Diesel	40	Above Ground	East & West
Shotcrete Pump	Putzmeister TK 60 HP	Diesel	131	Above Ground	East & West
Small Backhoe	Caterpillar 450 E	Diesel	125	Above Ground	East & West
Standard Backhoe	Caterpillar 450 E	Diesel	124	Above Ground	East & West
Surface Truck	Mack Truck CV712, AMI-300 ASET	Diesel	300	Above Ground	East & West
TBM	Not Estimated At This Time	electric		**Below Ground**	West Only
TBM Crane	Liebherr LTM 1200-5.1	Diesel	496	Above Ground	East & West
Tracked Swing Loader	John Deere 2954D	Diesel	188	Above Ground	East & West
Trailer Truck	Freightliner Classic XI	Diesel	455	Above Ground	West Only
Tunnel Pipe Transporter	Not Estimated At This Time	pulled by Locomotives		**Below Ground**	East & West
Ventilation System	Not Estimated At This Time	electric		Above Ground	East & West
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	Diesel	200	Above Ground	East & West
Water Tanker	Peterbilt 340	Diesel	330	Above Ground	East & West
Welding Machine	Not Estimated At This Time	electric		Above Ground	East & West

Emissions

NONROAD Emission Factors[1]												
Resource	Equipment Model Assumption	Engine Type (Assumed)	Estimated Horsepower	BAT: Pollutant Load after Control (%)[3]					Nonroad Emission Factors (g/hp-hr)			
				NOx	CO	PM	Lookup Factors		NOx	CO	PM10	PM2.5
Cranes and Winches												
Shaft Crane	Liebherr LTM 1200-5.1	Diesel	496	100%	100%	10%	C	C-D-0496	1.684	0.430	0.056	0.054
TBM Crane	Liebherr LTM 1200-5.1	Diesel	496	100%	100%	10%	C	C-D-0496	1.684	0.430	0.056	0.054
50T Crane	Liebherr LTM 1050-3.1	Diesel	367	100%	100%	10%	C	C-D-0367	1.684	0.430	0.056	0.054
150000 lb Winch	Ingersoll Rand HA3-075M	Air	25	100%	100%	100%	--					
100000 lbs Winch	Ingersoll Rand HA2-050M	Air	9.4	100%	100%	100%	--					
Hydraulic Winches	Ingersoll Rand LC2H500Q	electric		100%	100%	100%	--					
PB Winch	Timberland E780 General Purpose Winch	Air		100%	100%	100%	--					
Mixers												
Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	Diesel	40	100%	100%	100%	CMM	CMM-D-0040	2.318	1.232	0.224	0.217
Grout Mixers	Chemgrout CGMIX128/E	Electric		100%	100%	100%	--					
Pumps												
Concrete Pumps	Putzmeister TK 60 HP[2]	Diesel	131	100%	100%	10%	OCE	OCE-D-0131	2.132	0.798	0.080	0.080
Pump	Tsurumi TE3-100HA	Gas	8	100%	100%	100%	LCP	LCP-G-0008	1.416	206.299	0.084	0.077
Shotcrete Pump	Putzmeister TK 60 HP	Diesel	131	100%	100%	10%	OCE	OCE-D-0131	2.132	0.798	0.080	0.080
Grout Pumps	Putzmeister TK 60 HP	Diesel	131	100%	100%	10%	OCE	OCE-D-0131	2.132	0.798	0.080	0.080
Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	Diesel	1250	100%	100%	10%	OCE	CE-D-1001-120	3.309	1.392	0.008	0.008
Construction Equipment												
Small Backhoe	Caterpillar 450 E	Diesel	125	100%	100%	10%	TLB	TLB-D-0125	1.117	0.672	0.078	0.075
Surface Truck	Mack Truck CV712, AMI-300 ASET	Diesel	300	100%	100%	10%	--		0.08	0.06	0.004	0.003
Concrete Truck	2003 STERLING LT8513	Diesel	300	100%	100%	10%	--		0.08	0.06	0.004	0.003
Potable Water Truck	Freightliner FL-80	Diesel	300	100%	100%	10%	--		0.08	0.06	0.004	0.003
Fuel Truck	Freightliner FL-80	Diesel	300	100%	100%	10%	--		0.08	0.06	0.004	0.003
Other Trucks	Freightliner FL-80	Diesel	300	100%	100%	10%	--		0.08	0.06	0.004	0.003
Excavator	Liebherr R 934 C Ltronic	Diesel	195	100%	100%	10%	E	E-D-0195	1.417	0.479	0.107	0.104
Boom Truck	Manitowoc 900A	Diesel	300	100%	100%	10%	OT	OT-D-0300	1.386	0.555	0.112	0.108
Fork Lift	Caterpillar P20000	Diesel	148	100%	100%	10%	FL	FL-D-0148	1.311	0.562	0.155	0.151
Loaders	Caterpillar 950H	Diesel	197	100%	100%	10%	TLB	TLB-D-0197	1.051	0.560	0.059	0.057
Bulldozer	Caterpillar D8T	Diesel	310	100%	100%	10%	CTD	CTD-D-0310	1.917	0.746	0.103	0.100
Grader	John Deere 770G/GP	Diesel	245	100%	100%	10%	G	G-D-0245	1.517	0.501	0.105	0.102
Shaft Jumbos	Sandvik DD530	Diesel	228	100%	100%	10%	BDR	BDR-D-0228	2.130	0.585	0.052	0.051
Bolting Rigs	Atlas Copco Boltec SL	Diesel	74	100%	100%	10%	OCE	OCE-D-0074	2.495	1.894	0.177	0.172
Drill Jumbo	Sandvik DT920i	Diesel	241	100%	100%	10%	BDR	BDR-D-0241	2.130	0.585	0.052	0.051
Drill Jumbos	Sandvik DT920i	Diesel	241	100%	100%	10%	BDR	BDR-D-0241	2.130	0.585	0.052	0.051
Drill Rigs - Plugs	Schramm T130XD	Diesel	760	100%	100%	10%	BDR	BDR-D-0760	2.728	0.783	0.053	0.051
Drill Rigs - Pump Shaft - Pilot Hole	Micon Rotary Vertical Drilling System (RVDS)	Diesel	760	100%	100%	10%	BDR	BDR-D-0760	2.728	0.783	0.053	0.051
Drill Rigs - Pilot Holes	Robbins 85R Raisebore Rig	Diesel	760	100%	100%	10%	BDR	BDR-D-0760	2.728	0.783	0.053	0.051
Bobcat	S160 Skid Steer Loader	Diesel	61	100%	100%	10%	SSL	SSL-D-0061	1.268	1.405	0.100	0.097
Horizontal Directional Drill (HDD)	UNI 120X180	Diesel	325	100%	100%	10%	BDR	BDR-D-0325	2.213	0.681	0.053	0.051
Loco	Brookville Tunneling Locomotive	Diesel	100	100%	100%	10%	OCE	OCE-D-0100	2.390	2.016	0.177	0.172
TBM	Not Estimated At This Time	electric		100%	100%	100%	--					
Tunnel Pipe Transporter	Not Estimated At This Time	pulled by Locomotives		100%	100%	100%	--					
Piling Rig	auer. BG 12H Rotary Drilling Rig. Base Carrier BT35	Diesel	205	100%	100%	10%	C	C-D-0205	1.299	0.270	0.055	0.054
Excavator-SP	John Deere 450D LC	Diesel	348	100%	100%	10%	E	E-D-0348	1.751	0.675	0.105	0.102
Crawler Dozer	John Deere 770J	Diesel	115	100%	100%	10%	CTD	CTD-D-0115	1.687	0.670	0.142	0.138
Harvester	John Deere 759H	Diesel	241	100%	100%	10%	E	E-D-0241	1.417	0.479	0.107	0.104
Tracked Swing Loader	John Deere 2954D	Diesel	188	100%	100%	10%	CTD	CTD-D-0188	1.535	0.505	0.105	0.102
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker	Diesel	348	100%	100%	10%	E	E-D-0348	1.751	0.675	0.105	0.102
Rock Crusher	McCloskey MCB C50	Diesel	350	100%	100%	10%	CPE	CPE-D-0350	1.730	0.461	0.055	0.054
Rock Cutter	Vermeer T955	Diesel	415	100%	100%	10%	E	E-D-0415	1.751	0.675	0.105	0.102
Rock Drill/Excavator	TEI HEM Excavator Drill	Diesel	348	100%	100%	10%	E	E-D-0348	1.751	0.675	0.105	0.102
Paver	Caterpillar AP-1000D	Diesel	224	100%	100%	10%	P	P-D-0224	1.646	0.528	0.103	0.100
Roller	Caterpillar CB34 XW	Diesel	46	100%	100%	100%	R	R-D-0046	2.617	0.909	0.283	0.274
Crane	Terex T750 Truck Crane	Diesel	500	100%	100%	10%	C	C-D-0500	1.684	0.430	0.056	0.054
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	Diesel	200	100%	100%	10%	C	C-D-0200	1.299	0.270	0.055	0.054
Pile Driver	ABI Excavator Mounted Driver Model HVR 75	Diesel	200	100%	100%	10%	C	C-D-0200	1.299	0.270	0.055	0.054
Hydroseeder	FINN Model T120 Hydroseeder	Diesel	35	100%	100%	100%	CTE	CTE-D-0035	1.910	0.608	0.166	0.161
Compressor	Sullair 750H	Diesel	275	100%	100%	10%	LCAC	LCAC-D-0275	1.468	0.302	0.054	0.053
Pump	Honda WT40X	Gas	11	100%	100%	100%	LCP	LCP-D-0011	2.364	1.969	0.221	0.215
Pickup Truck	Ford F-150	Diesel	365	100%	100%	10%	--		0.07	0.05	0.003	0.003
20 Yard Dump Truck	Kenworth T800	Diesel	525	100%	100%	10%	--		0.05	0.04	0.002	0.002
30 Yard Dump Truck	Kenworth W900B	Diesel	475	100%	100%	10%	--		0.05	0.04	0.002	0.002
Flat Truck	Ford F-650	Diesel	250	100%	100%	10%	--		0.10	0.08	0.004	0.004
Rack Truck	Ford F-350/Whitney Racks	Diesel	385	100%	100%	10%	--		0.07	0.05	0.003	0.003
Log Hauler	Kenworth 900B W/Log Hauler	Diesel	500	100%	100%	10%	--		0.05	0.04	0.002	0.002
12 Yard Concrete Mixer	Peterbilt 365	Diesel	455	100%	100%	10%	--		0.06	0.04	0.002	0.002
Asphalt Flow Boy	Flow Boy 3064	Diesel	425	100%	100%	10%	--		0.06	0.04	0.003	0.002
Water Tanker	Peterbilt 340	Diesel	330	100%	100%	10%	--		0.08	0.06	0.003	0.003
Box Truck	Chevrolet Express 3500	Diesel	325	100%	100%	10%	--		0.08	0.06	0.003	0.003
Fuel Tanker	Kenworth T-370, Paccar PX-8	Diesel	300	100%	100%	10%	--		0.08	0.06	0.004	0.003
Cement Tanker	CSC Bulk Cement Trans DFL 1311A1	Diesel	300	100%	100%	10%	--		0.08	0.06	0.004	0.003
Semi-Trailer Truck	Freightliner CA113DC	Diesel	450	100%	100%	10%	--		0.06	0.04	0.002	0.002
Trailer Truck	Freightliner Classic Xl	Diesel	455	100%	100%	10%	--		0.06	0.04	0.002	0.002
Standard Backhoe	Caterpillar 450 E	Diesel	124	100%	100%	10%	TLB	TLB-D-0124	1.117	0.672	0.078	0.075
Front End Loader	Caterpillar 950H	Diesel	197	100%	100%	10%	TLB	TLB-D-0197	1.051	0.560	0.059	0.057
Generator	Caterpillar XQ 45	Diesel	96	100%	100%	10%	LCGS	LCGS-D-0096	2.190	1.196	0.102	0.099
Chipper	Vermeer WC2300	Diesel	440	100%	100%	10%	CSGC	CSGC-D-0440	2.005	0.619	0.053	0.051
Misc. Equipment												
Compressors	Sullair 750H	Diesel	275	100%	100%	10%	LCAC	LCAC-D-0275	1.468	0.302	0.054	0.053
Generators	Terex T360	Diesel	426	100%	100%	10%	LCGS	LCGS-D-0426	2.065	0.648	0.052	0.051
Welding Machine	Not Estimated At This Time	electric		100%	100%	100%	--					
Ventilation System	Not Estimated At This Time	electric		100%	100%	100%	--					
Booster Fans	Not Estimated At This Time	electric		100%	100%	100%	--					
Man Hoists	Alimak Scando 65	electric		100%	100%	100%	--					

Notes

1. Emission factors, derived from the NONROAD model output, were back calculated from the NONROAD regional emissions estimates. For PM, a base year of 2013 was used in conjunction with a 90% control efficiency for use of diesel particulate fiilters on all equipment.

2. Concrete pumps are truck mounted and use the truck engine to power the pumps at high load. This application of truck engines is not addressed by the MOBILE6 model, and since it is not a non-road engine, it is not included in the NONROAD model. Emission factors were obtained from a study which developed factors specifically for this type of activity. FEIS for the Proposed Manhattanville In West Harlem Rezoning And Academic Mixed-Use Development, CPC–NYCDCP, November 16, 2007

3. DPF (%) = Diesel Particulate Filter (percent PM removed or 1 - control eff = 1 - 0.90 = 0.10 or 10%) for equipment greater than 50 hp.

2013 Mobile 6.2 EF	Idling (g/hr)	Cruise-5mph (g/mi)
PM2.5	1.00	0.16
PM10	1.09	0.21
CO	19.10	6.24
NOx	25.34	9.18

Trucks (Cruise Emissions)

Onsite Trucks - Cruise Emissions										Example						
Activity	Analysis Period	Roundtrip Travel Distance (ft)	Shifts/ Day	Hours/ Shift	Hours/ Day	Trucks Days/ Week	Trucks/ Day (Peak)	Trucks/Day (Avg)	PM2.5 Cruise Emissions (g/s)	Cruise Emissions per Source (g/s/Source)	PM10 Cruise Emissions (g/s)	se Emissions per Source (g/s/Source)	CO Cruise Emissions (g/s)	CO Cruise Emissions per Source (g/s/Source)	NOx Cruise Emissions (g/s)	Cruise Emissions per Source (g/s/Source)
Peak #1 - West Connection Site - Site Prep																
Site Prep (Stage 3)	ST	5500	2	8	16	6	22		2.10E-04	3.50E-06	2.92E-03	4.87E-05	8.15E-03	1.36E-04	1.20E-02	2.00E-04
Site Prep (Stage 1)	ST	2450	1	12	12	6	17		9.63E-05	4.59E-06	2.85E-03	1.36E-04	3.74E-03	6.23E-05	5.50E-03	2.62E-04
Site Prep (Stage 2)	ST	2450	1	12	12	6	26		1.47E-04	7.02E-06	4.36E-03	2.08E-04	5.72E-03	9.53E-05	8.41E-03	4.01E-04
Site Prep (Stage 4)	ST	2450	2	8	16	6	6		2.55E-05	1.21E-06	7.55E-04	3.60E-05	9.90E-04	1.65E-05	1.46E-03	6.93E-05
Site Prep (Stage 5)	ST	5500	2	8	16	6	6		5.72E-05	9.54E-07	7.96E-04	1.33E-05	2.22E-03	3.70E-05	3.27E-03	5.45E-05
Site Prep (Stage 6)	ST	5500	1	12	12	6	6		7.63E-05	1.27E-06	9.90E-05	1.65E-06	2.96E-03	4.94E-05	4.36E-03	7.26E-05
Site Prep (Stage 3)	ANN	5500	2	8	16	6		11	1.05E-04	1.75E-06					5.99E-03	9.99E-05
Site Prep (Stage 1)	ANN	2450	1	12	12	6		8	4.53E-05	2.16E-06					2.59E-03	1.23E-04
Site Prep (Stage 2)	ANN	2450	1	12	12	6		13	7.37E-05	3.51E-06					4.21E-03	2.00E-04
Site Prep (Stage 4)	ANN	2450	2	8	16	6		3	1.27E-05	6.07E-07					7.28E-04	3.47E-05
Site Prep (Stage 5)	ANN	5500	2	8	16	6		3	2.86E-05	4.77E-07					1.63E-03	2.72E-05
Site Prep (Stage 6)	ANN	5500	1	12	12	6		3	3.82E-05	6.36E-07					2.18E-03	3.63E-05
Peak #2 - West Connection Site - TBM Tunneling and Inundation Plugs (October 2015)																
Inundation Plug	ST	5500	2	10	20	5	9		6.87E-05	1.14E-06	9.55E-04	1.59E-05	2.67E-03	4.44E-05	3.92E-03	6.54E-05
(TBM Tunneling) TBM Starter Tunnel - Excavation + Lining	ST	5500	3	8	24	5	78		4.96E-04	8.27E-06	6.82E-03	1.14E-04	1.93E-02	3.21E-04	2.83E-02	4.72E-04
Inundation Plug	ANN	5500	2	10	20	5		6	4.58E-05	7.63E-07					2.61E-03	4.36E-05
TBM Tunneling	ANN	5500	3	8	24	5		44	2.80E-04	4.66E-06					1.60E-02	2.66E-04
Mobilization	ANN	5500	2	8	16	5		4	3.82E-05	6.36E-07					2.18E-03	3.63E-05
Erecting TBM	ANN	5500	3	8	24	5		4	2.54E-05	4.24E-07					1.45E-03	2.42E-05
Peak #3 - East Connection Site - Site Prep																
Site Prep - Stage 4	ST	1820	1	8	8	5	5		3.16E-05	1.44E-06	4.39E-04	2.00E-05	1.23E-03	5.57E-05	1.80E-03	8.19E-05
Shaft Construction-Soil	ST	1820	2	8	16	5	20		6.31E-05	2.87E-06	8.78E-04	3.99E-05	2.45E-03	1.11E-04	3.61E-03	1.64E-04
Shaft Construction-Rock	ST	1820	2	8	16	5	20		6.31E-05	2.87E-06	8.78E-04	3.99E-05	2.45E-03	1.11E-04	3.61E-03	1.64E-04
Site Prep - Stage 4	ANN	1820	1	8	8	5		4	2.53E-05	1.15E-06					1.44E-03	6.56E-05
Shaft Construction-Soil	ANN	1820	2	8	16	5		12	3.79E-05	1.72E-06					2.16E-03	9.83E-05
Shaft Construction-Rock	ANN	1820	2	8	16	5		12	3.79E-05	1.72E-06					2.16E-03	9.83E-05
Secant Pile	ANN	1820	2	8	16	5		12	3.79E-05	1.72E-06					2.16E-03	9.83E-05
Site Prep - Stage 2	ANN	1220	1	8	8	5		4	1.69E-05	1.13E-06					9.67E-04	6.45E-05
Site Prep - Stage 3	ANN	1820	1	8	8	5		5	3.16E-05	1.44E-06					1.80E-03	8.19E-05
Site Prep - Stage 5	ANN	1550	1	8	8	5		2	1.08E-05	5.66E-07					6.14E-04	3.23E-05
Peak #4 -East Connection Site - Inundation Plugs																
Inundation Plug Construction	ST	1180	2	10	20	5	9		1.47E-05	9.83E-07	8.86E-04	5.90E-05	5.72E-04	3.81E-05	8.42E-04	5.61E-05
Inundation Plug Construction	ANN	1180	2	10	20	5		6	9.83E-06	6.55E-07					5.61E-04	3.74E-05

Sample Calculation
PM2.5 Cruise Emission (g/s) = Emission Factor (g/VMT) * Distance traveled (miles) * Trucks/Hour *(1hr/3600s)
(Row 4) PM2.5 Cruise Emission (g/s) = 0.16 g/mi * (1820ft * 0.0006213712 ft/mile) * (5/8) truck per hour * (1hr/3600)s = 3.16 X 10-5

West Connection Site – Site Preparation Emissions

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours / Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	Pollutant Load after Control (%)
Site Preparation Stage 3												
Pickup Truck	Ford F-150	365	Above Ground	2	2	8	16	6	20%	100%	20%	100%
Flat Truck	Ford F-650	250	Above Ground	2	2	8	16	6	20%	100%	20%	100%
Rack Truck	Ford F-350 W/Whitney Racks	385	Above Ground	1	2	8	16	6	20%	100%	20%	100%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	4	2	8	16	6	75%	75%	56%	100%
30 Yard Dump Truck	Kenworth W900B	475	Above Ground	2	2	8	16	6	75%	50%	38%	100%
Log Hauler	Kenworth 900B W/Log Hauler	500	Above Ground	2	2	8	16	6	60%	25%	15%	100%
12 Yard Concrete Mixer	Peterbilt 365	455	Above Ground	1	2	8	16	6	20%	10%	2%	10%
Asphalt Flow Boy	Flow Boy 3064	425	Above Ground	2	2	8	16	6	60%	10%	6%	100%
Water Tanker	Peterbilt 340	330	Above Ground	1	2	8	16	6	60%	50%	30%	100%
Box Truck	Chevrolet Express 3500	325	Above Ground	1	2	8	16	6	10%	50%	5%	100%
Boom Truck	Terex BT 5092	300	Above Ground	1	2	8	16	6	20%	25%	5%	10%
Bulldozer	Caterpillar D8T	310	Above Ground	2	2	8	16	6	75%	100%	75%	10%
Standard Backhoe	Caterpillar 450E	124	Above Ground	2	2	8	16	6	75%	100%	75%	10%
Front End Loader	Caterpillar 950H	197	Above Ground	2	2	8	16	6	75%	100%	75%	10%
Excavator	John Deere 450D LC	348	Above Ground	2	2	8	16	6	75%	100%	75%	10%
Grader	John Deere 770G/GP	245	Above Ground	1	2	8	16	6	50%	50%	25%	10%
Crawler Dozer	JOhn Deere 770J	115	Above Ground	1	2	8	16	6	60%	50%	30%	10%
Harvester	John Deere 759H	247	Above Ground	1	2	8	16	6	60%	50%	30%	10%
Tracked Swing Loader	John Deere 2954D	188	Above Ground	1	2	8	16	6	50%	50%	25%	10%
Chipper	Vermeer WC2300	440	Above Ground	2	2	8	16	5	50%	50%	25%	10%
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	Above Ground	1	2	8	16	6	75%	25%	19%	10%
Rock Crusher	McCloskey MCB C50	350	Above Ground	1	2	8	16	6	50%	25%	13%	10%
Rock Cutter	Vermeer T955	415	Above Ground	1	2	8	16	6	70%	25%	18%	10%
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	Above Ground	1	2	8	16	6	70%	10%	7%	10%
Paver	Caterpillar AP-1000D	224	Above Ground	1	2	8	16	6	60%	10%	6%	10%
Roller	Caterpillar CB34 XW	46	Above Ground	1	2	8	16	6	50%	10%	5%	100%
Crane	Terex T750 Truck Crane	500	Above Ground	1	2	8	16	6	20%	25%	5%	10%
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	Above Ground	1	2	8	16	6	60%	10%	6%	10%
Hydroseeder	Finn Model T120 Hydroseeder	35	Above Ground	1	2	8	16	6	60%	10%	6%	100%
Compressor	Sullair 750H	275	Above Ground	1	2	8	16	6	50%	50%	25%	10%
Generator	Caterpillar XQ45	96	Above Ground	1	2	8	16	6	80%	50%	40%	10%
Pump	Honda WT40X	11	Above Ground	1	2	8	16	6	50%	10%	5%	100%

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Site Preparation Stage 3				22	11											
Pickup Truck	Ford F-150	365	T	5	1	A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3TKS1	SP3EQP1
Flat Truck	Ford F-650	250	T	2	1	A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3TKS1	SP3EQP1
Rack Truck	Ford F-350 W/Whitney Racks	385	T	1	1	A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3TKS1	SP3EQP1
20 Yard Dump Truck	Kenworth T800	525	T	4	3	A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3TKS1	SP3EQP1
30 Yard Dump Truck	Kenworth W900B	475	T	2	1	A	A	9,327.2	29,098.1	2.74	1.3	--	--	--	SP3RCKE1	SP3EQP1
Log Hauler	Kenworth 900B W/Log Hauler	500	T	2	1	A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3FORE1	SP3EQP1
12 Yard Concrete Mixer	Peterbilt 365	455	CT	1	1	P	A	--	29,098.1	2.74	--	523	23.9	0.152	SP3CMIX1	SP3EQP1
Asphalt Flow Boy	Flow Boy 3064	425	T	2	1	A	A	8,845.0	8,845.0	2.74	1.3	--	--	--	SP3RODE1	SP3RODE1
Water Tanker	Peterbilt 340	330	T	1	1	A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3TKS1	SP3EQP1
Box Truck	Chevrolet Express 3500	325	T	1		A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3TKS1	SP3EQP1
Boom Truck	Terex BT 5092	300	E			P	A	--	29,098.1	2.74	--	523	15.7	0.152	SP3BTK1	SP3EQP1
Bulldozer	Caterpillar D8T	310	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3OTHE1	SP3EQP1
Standard Backhoe	Caterpillar 450E	124	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3OTHE1	SP3EQP1
Front End Loader	Caterpillar 950H	197	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3OTHE1	SP3EQP1
Excavator	John Deere 450D LC	348	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3OTHE1	SP3EQP1
Grader	John Deere 770G/GP	245	E			A	A	8,845.0	8,845.0	2.74	1.3	--	--	--	SP3RODE1	SP3RODE1
Crawler Dozer	JOhn Deere 770J	115	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3FORE1	SP3EQP1
Harvester	John Deere 759H	247	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3FORE1	SP3EQP1
Tracked Swing Loader	John Deere 2954D	188	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3FORE1	SP3EQP1
Chipper	Vermeer WC2300	440	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3FORE1	SP3EQP1
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	E			P	A	9,327.2	29,098.1	2.74	--	523	18.2	0.152	SP3RCKB1	SP3EQP1
Rock Crusher	McCloskey MCB C50	350	E			P	A	--	29,098.1	2.74	--	523	18.3	0.152	SP3RCRU1	SP3EQP1
Rock Cutter	Vermeer T955	415	E			A	A	9,327.2	29,098.1	2.74	1.3	--	--	--	SP3RCKE1	SP3EQP1
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	E			P	A	9,327.2	29,098.1	2.74	--	523	18.2	0.152	SP3RCKD1	SP3EQP1
Paver	Caterpillar AP-1000D	224	E			A	A	8,845.0	8,845.0	2.74	1.3	--	--	--	SP3RODE1	SP3RODE1
Roller	Caterpillar CB34 XW	46	E			A	A	8,845.0	8,845.0	2.74	1.3	--	--	--	SP3RODE1	SP3RODE1
Crane	Terex T750 Truck Crane	500	E			P	A	--	29,098.1	3.66	--	523	26.2	0.152	SP3CRA1	SP3EQP1
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	E			P	A	--	29,098.1	2.74	--	523	10.5	0.152	SP3VSHD1	SP3EQP1
Hydroseeder	Finn Model T120 Hydroseeder	35	E			A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3OTHE1	SP3EQP1
Compressor	Sullair 750H	275	E			P	A	--	29,098.1	1.83	--	523	14.4	0.152	SP3COMP1	SP3EQP1
Generator	Caterpillar XQ45	96	E			P	A	--	29,098.1	1.83	--	523	5.0	0.152	SP3GENR1	SP3EQP1
Pump	Honda WT40X	11	E			P	A	--	29,098.1	1.83	--	523	0.6	0.152	SP3WPMP1	SP3EQP1

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s/m^2)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ Annual Emission per Eqp (g/s)	PM2.5 Annual Emission per Eqp (g/s/m2)	PM_{10} EF (g/hp-hr)	PM_{10} 24-Hr Emission per Eqp (g/s)	PM_{10} 24-Hr Emission per Eqp (g/s/m^2)	NOx EF (g/hp-hr)	NOx Annual Emission per Eqp (g/s)	NOx Annual Emission per Eqp (g/s/m2)	CO EF (g/hp-hr)	CO 1-Hr Emission per Eqp (g/s)	CO 1-Hr Emission per Eqp (g/s/m^2)	CO EF (g/hp-hr)	CO 8-Hr Emission per Eqp (g/s)	CO 8-Hr Emission per Eqp (g/s/m^2)
Site Preparation Stage 3																					
Pickup Truck	Ford F-150	365	0.003		2.49E-10	0.003		4.97E-11	0.003		2.70E-10	0.069		1.26E-09	0.052		4.75E-09	0.052		4.75E-09
Flat Truck	Ford F-650	250	0.004		9.94E-11	0.004		4.97E-11	0.004		1.08E-10	0.101		1.26E-09	0.076		1.90E-09	0.076		1.90E-09
Rack Truck	Ford F-350 W/Whitney Racks	385	0.003		4.97E-11	0.003		4.97E-11	0.003		5.40E-11	0.066		1.26E-09	0.050		9.50E-10	0.050		9.50E-10
20 Yard Dump Truck	Kenworth T800	525	0.002		1.99E-10	0.002		1.49E-10	0.002		2.16E-10	0.048		3.78E-09	0.036		3.80E-09	0.036		3.80E-09
30 Yard Dump Truck	Kenworth W900B	475	0.002		3.10E-10	0.002		4.97E-11	0.002		3.37E-10	0.053		1.26E-09	0.040		5.93E-09	0.040		5.93E-09
Log Hauler	Kenworth 900B W/Log Hauler	500	0.002		9.94E-11	0.002		4.97E-11	0.002		1.08E-10	0.051		1.26E-09	0.038		1.90E-09	0.038		1.90E-09
12 Yard Concrete Mixer	Peterbilt 365	455	0.002	1.30E-06		0.002		4.47E-11	0.002	1.42E-06		0.056		1.13E-08	0.042	2.49E-04		0.042	2.49E-04	
Asphalt Flow Boy	Flow Boy 3064	425	0.002		3.27E-10	0.002		1.64E-10	0.003		3.56E-10	0.060		4.14E-09	0.045		6.25E-09	0.045		6.25E-09
Water Tanker	Peterbilt 340	330	0.003		4.97E-11	0.003		4.97E-11	0.003		5.40E-11	0.077		1.26E-09	0.058		9.50E-10	0.058		9.50E-10
Box Truck	Chevrolet Express 3500	325	0.003		4.97E-11	0.003			0.003		5.40E-11	0.078			0.059		9.50E-10	0.059		9.50E-10
Boom Truck	Terex BT 5092	300	0.108	1.80E-04		0.108		1.55E-09	0.112	1.86E-04		1.386		1.98E-07	0.555	4.62E-02		0.555	9.24E-03	
Bulldozer	Caterpillar D8T	310	0.100		4.43E-08	0.100		4.43E-08	0.103		4.57E-08	1.917		8.51E-06	0.746		4.41E-06	0.746		3.31E-06
Standard Backhoe	Caterpillar 450E	124	0.075		1.34E-08	0.075		1.34E-08	0.078		1.38E-08	1.117		1.98E-06	0.672		1.59E-06	0.672		1.19E-06
Front End Loader	Caterpillar 950H	197	0.057		1.60E-08	0.057		1.60E-08	0.059		1.65E-08	1.051		2.97E-06	0.560		2.11E-06	0.560		1.58E-06
Excavator	John Deere 450D LC	348	0.104		5.18E-08	0.104		5.18E-08	0.107		5.34E-08	1.417		7.06E-06	0.479		3.18E-06	0.479		2.39E-06
Grader	John Deere 770G/GP	245	0.102		3.93E-08	0.102		1.97E-08	0.105		4.05E-08	1.517		2.92E-06	0.501		3.86E-06	0.501		1.93E-06
Crawler Dozer	JOhn Deere 770J	115	0.138		9.07E-09	0.138		4.53E-09	0.142		9.35E-09	1.687		5.55E-07	0.670		7.36E-07	0.670		4.41E-07
Harvester	John Deere 759H	247	0.104		1.47E-08	0.104		7.36E-09	0.107		1.52E-08	1.417		1.00E-06	0.479		1.13E-06	0.479		6.77E-07
Tracked Swing Loader	John Deere 2954D	188	0.102		9.14E-09	0.102		4.57E-09	0.105		9.43E-09	1.535		6.89E-07	0.505		9.06E-07	0.505		4.53E-07
Chipper	Vermeer WC2300	440	0.051		2.15E-08 5.45E-08	0.051		1.07E-08	0.053		2.21E-08 5.62E-08	2.005		4.21E-06	0.619		5.20E-06 7.97E-06	0.619		2.60E-06 4.17E-06
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	0.102	7.38E-04		0.102		6.34E-09	0.105	7.60E-04		1.751		1.09E-06	0.675	6.53E-02		0.675	4.89E-02	
Rock Crusher	McCloskey MCB C50	350	0.054	2.62E-04		0.054		2.25E-09	0.055	2.70E-04		1.730		7.22E-07	0.461	4.48E-02		0.461	2.24E-02	
Rock Cutter	Vermeer T955	415	0.102		8.80E-08	0.102		7.05E-09	0.105		9.07E-08	1.751		1.21E-06	0.675		8.34E-06	0.675		5.84E-06
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	0.102	6.88E-04		0.102		2.37E-09	0.105	7.10E-04		1.751		4.07E-07	0.675	6.53E-02		0.675	4.57E-02	
					8.83E-08						9.11E-08						8.35E-06			5.85E-06
Paver	Caterpillar AP-1000D	224	0.100		4.23E-08	0.100		4.23E-09	0.103		4.37E-08	1.646		6.95E-07	0.528		3.72E-06	0.528		2.23E-06
Roller	Caterpillar CB34 XW	46	0.274		1.98E-07 2.80E-07	0.274		1.98E-08 4.39E-08	0.283		2.04E-07 2.89E-07	2.617		1.89E-07 3.81E-06	0.909		1.31E-06 8.89E-06	0.909		6.57E-07 4.82E-06
Crane	Terex T750 Truck Crane	500	0.054	1.50E-04		0.054		1.29E-09	0.056	1.55E-04		1.684		4.02E-07	0.430	5.97E-02		0.430	1.19E-02	
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	0.054	1.79E-04		0.054		6.14E-10	0.055	1.84E-04		1.299		1.49E-07	0.270	1.50E-02		0.270	9.01E-03	
Hydroseeder	Finn Model T120 Hydroseeder	35	0.161		3.23E-08 1.58E-07	0.161		3.23E-09	0.166		3.34E-08 1.63E-07	1.910		3.83E-08	0.608		2.03E-07 1.15E-05	0.608		1.22E-07 8.59E-06
Compressor	Sullair 750H	275	0.053	2.01E-04		0.053		3.45E-09	0.054	2.07E-04		1.468		9.63E-07	0.302	2.30E-02		0.302	1.15E-02	
Generator	Caterpillar XQ45	96	0.099	2.11E-04		0.099		3.63E-09	0.102	2.18E-04		2.190		8.03E-07	1.196	3.19E-02		1.196	2.55E-02	
Pump	Honda WT40X	11	0.077	1.18E-04		0.077		4.04E-10	0.084	1.28E-04		1.416		7.43E-09	206.299	6.30E-01		206.299	3.15E-01	

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours / Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	Pollutant Load after Control (%)
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	Above Ground	1	2	8	16	6	10%	10%	1%	100%
Annual Peak Period Only:												
Site Preparation Stage 1												
Pickup Truck	Ford F-150	365	Above Ground	2	1	12	12	6	20%	100%	20%	100%
Rack Truck	Ford F-350 W/Whitney Racks	385	Above Ground	1	1	12	12	6	20%	100%	20%	100%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	2	1	12	12	6	75%	50%	38%	100%
30 Yard Dump Truck	Kenworth W900B	475	Above Ground	1	1	12	12	6	75%	50%	38%	100%
Boom Truck	Terex BT5092	300	Above Ground	1	1	12	12	6	20%	25%	5%	10%
Bulldozer	Caterpillar D8T	310	Above Ground	1	1	12	12	6	75%	50%	38%	10%
Standard Backhoe	Caterpillar 450E	124	Above Ground	1	1	12	12	6	75%	100%	75%	10%
Front End Loader	Caterpillar 950H	197	Above Ground	1	1	12	12	6	75%	100%	75%	10%
Grader	John Deere 770 G/GP	245	Above Ground	1	1	12	12	6	50%	50%	25%	10%
Roller	Caterpillar CB34 XW	46	Above Ground	1	1	12	12	6	50%	50%	25%	100%
Compressor	Sullair 750H	275	Above Ground	1	1	12	12	6	50%	50%	25%	10%
Generator	Caterpillar XQ45	96	Above Ground	1	1	12	12	6	80%	50%	40%	10%
Log Hauler	Kenworth 900B W/Log Hauler	500	Above Ground	1	1	12	12	6	60%	25%	15%	100%
Harvester	John Deere 759H	247	Above Ground	2	1	12	12	6	60%	50%	30%	10%
Tracked Swing Loader	John Deere 2954D	188	Above Ground	2	1	12	12	6	50%	50%	25%	10%
Chipper	Vermeer WC2300	440	Above Ground	2	1	12	12	5	50%	50%	25%	10%
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	Above Ground	1	1	12	12	6	10%	10%	1%	100%

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	T	1		A	A	29,098.1	29,098.1	2.74	1.3	--	--	--	SP3TKS1	SP3EQP1
Annual Peak Period Only:																
Site Preparation Stage 1				5	8											
Pickup Truck	Ford F-150	365	T	4	2	A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1TKS1	SP1EQP1
Rack Truck	Ford F-350 W/Whitney Racks	385	T	2	1	A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1TKS1	SP1EQP1
20 Yard Dump Truck	Kenworth T800	525	T	4	2	A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1TKS1	SP1EQP1
30 Yard Dump Truck	Kenworth W900B	475	T	2	1	A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1TKS1	SP1EQP1
Boom Truck	Terex BT5092	300	E			P	A	--	96,739.8	2.74	--	523	15.7	0.152	SP1BTK1	SP1EQP1
Bulldozer	Caterpillar D8T	310	E			A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1OTHE1	SP1EQP1
Standard Backhoe	Caterpillar 450E	124	E			A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1OTHE1	SP1EQP1
Front End Loader	Caterpillar 950H	197	E			A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1OTHE1	SP1EQP1
Grader	John Deere 770 G/GP	245	E			A	A	10,332.3	10,332.3	2.74	1.3	--	--	--	SP1RODE1	SP1RODE1
Roller	Caterpillar CB34 XW	46	E			A	A	10,332.3	10,332.3	2.74	1.3	--	--	--	SP1RODE1	SP1RODE1
Compressor	Sullair 750H	275	E			P	A	--	96,739.8	1.83	--	523	14.4	0.152	SP1COMP1	SP1EQP1
Generator	Caterpillar XQ45	96	E			P	A	--	96,739.8	1.83	--	523	5.0	0.152	SP1GENR1	SP1EQP1
Log Hauler	Kenworth 900B W/Log Hauler	500	T	2	1	A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1FORE1	SP1EQP1
Harvester	John Deere 759H	247	E			A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1FORE1	SP1EQP1
Tracked Swing Loader	John Deere 2954D	188	E			A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1FORE1	SP1EQP1
Chipper	Vermeer WC2300	440	E			A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1FORE1	SP1EQP1
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	T	2	1	A	A	96,739.8	96,739.8	2.74	1.3	--	--	--	SP1TKS1	SP1EQP1

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s)	$PM_{2.5}$ 24-Hr Emission per Eqp ($g/s/m^2$)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ Annual Emission per Eqp (g/s)	PM2.5 Annual Emission per Eqp (g/s/m2)	PM_{10} EF (g/hp-hr)	PM_{10} 24-Hr Emission per Eqp (g/s)	PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)	NOx EF (g/hp-hr)	NOx Annual Emission per Eqp (g/s)	NOx Annual Emission per Eqp (g/s/m2)	CO EF (g/hp-hr)	CO 1-Hr Emission per Eqp (g/s)	CO 1-Hr Emission per Eqp ($g/s/m^2$)	CO EF (g/hp-hr)	CO 8-Hr Emission per Eqp (g/s)	CO 8-Hr Emission per Eqp ($g/s/m^2$)
								1.85E-07												
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	0.003		4.97E-11	0.003			0.004		5.40E-11	0.084			0.064		9.50E-10	0.064		9.50E-10
					7.46E-10						8.11E-10			3.30E-05			1.42E-08			1.42E-08
Annual Peak Period Only:																				
Site Preparation Stage 1																				
Pickup Truck	Ford F-150	365	0.003		7.98E-11	0.003		3.99E-11	0.003		8.67E-11	0.069		1.01E-09	0.052		1.52E-09	0.052		1.52E-09
Rack Truck	Ford F-350 W/Whitney Racks	385	0.003		3.99E-11	0.003		1.99E-11	0.003		4.33E-11	0.066		5.05E-10	0.050		7.62E-10	0.050		7.62E-10
20 Yard Dump Truck	Kenworth T800	525	0.002		7.98E-11	0.002		3.99E-11	0.002		8.67E-11	0.048		1.01E-09	0.036		1.52E-09	0.036		1.52E-09
30 Yard Dump Truck	Kenworth W900B	475	0.002		3.99E-11	0.002		1.99E-11	0.002		4.33E-11	0.053		5.05E-10	0.040		7.62E-10	0.040		7.62E-10
Boom Truck	Terex BT5092	300	0.108	1.80E-04		0.108		4.66E-10	0.112	1.86E-04		1.386		5.97E-08	0.555	4.62E-02		0.555	9.24E-03	
Bulldozer	Caterpillar D8T	310	0.100		6.66E-09	0.100		3.33E-09	0.103		6.87E-09	1.917		6.40E-07	0.746		6.64E-07	0.746		4.98E-07
Standard Backhoe	Caterpillar 450E	124	0.075		2.02E-09	0.075		2.02E-09	0.078		2.08E-09	1.117		2.98E-07	0.672		2.39E-07	0.672		1.79E-07
Front End Loader	Caterpillar 950H	197	0.057		2.41E-09	0.057		2.41E-09	0.059		2.48E-09	1.051		4.46E-07	0.560		3.17E-07	0.560		2.38E-07
					1.11E-08															
Grader	John Deere 770 G/GP	245	0.102		3.37E-08	0.102		1.68E-08	0.105		3.47E-08	1.517		2.50E-06	0.501		3.30E-06	0.501		1.65E-06
Roller	Caterpillar CB34 XW	46	0.274		1.69E-07	0.274		8.47E-08	0.283		1.75E-07	2.617		8.09E-07	0.909		1.12E-06	0.909		5.62E-07
					2.03E-07			1.02E-07						3.31E-06						
Compressor	Sullair 750H	275	0.053	2.01E-04		0.053		1.04E-09	0.054	2.07E-04		1.468		2.90E-07	0.302	2.30E-02		0.302	1.15E-02	
Generator	Caterpillar XQ45	96	0.099	2.11E-04		0.099		1.09E-09	0.102	2.18E-04		2.190		2.41E-07	1.196	3.19E-02		1.196	2.55E-02	
Log Hauler	Kenworth 900B W/Log Hauler	500	0.002		3.99E-11	0.002		1.99E-11	0.002		4.33E-11	0.051		5.05E-10	0.038		7.62E-10	0.038		7.62E-10
Harvester	John Deere 759H	247	0.104		8.85E-09	0.104		4.43E-09	0.107		9.12E-09	1.417		6.03E-07	0.479		6.79E-07	0.479		4.07E-07
Tracked Swing Loader	John Deere 2954D	188	0.102		5.50E-09	0.102		2.75E-09	0.105		5.67E-09	1.535		4.14E-07	0.505		5.45E-07	0.505		2.72E-07
Chipper	Vermeer WC2300	440	0.051		6.46E-09	0.051		3.23E-09	0.053		6.66E-09	2.005		1.27E-06	0.619		1.56E-06	0.619		7.82E-07
					2.08E-08															
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	0.003		3.99E-11	0.003		1.99E-11	0.004		4.33E-11	0.084		5.05E-10	0.064		7.62E-10	0.064		7.62E-10
					2.79E-10			2.09E-08						4.26E-06						

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours / Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	Pollutant Load after Control (%)
Site Preparation Stage 2												
Pickup Truck	Ford F-150	365	Above Ground	2	1	12	12	6	20%	100%	20%	100%
Flat Truck	Ford F-650	250	Above Ground	1	1	12	12	6	20%	100%	20%	100%
Rack Truck	Ford F-350 W/Whitney Racks	385	Above Ground	1	1	12	12	6	20%	100%	20%	100%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	4	1	12	12	6	75%	50%	38%	100%
30 Yard Dump Truck	Kenworth W900B	475	Above Ground	1	1	12	12	6	75%	50%	38%	100%
Bulldozer	Caterpillar D8T	310	Above Ground	1	1	12	12	6	75%	25%	19%	10%
Standard Backhoe	Caterpillar 450E	124	Above Ground	1	1	12	12	6	75%	100%	75%	10%
Front End Loader	Caterpillar 950H	197	Above Ground	1	1	12	12	6	75%	50%	38%	10%
Excavator	John Deere 450D LC	348	Above Ground	2	1	12	12	6	75%	75%	56%	10%
Roller	Caterpillar CB34 XW	46	Above Ground	1	1	12	12	6	50%	25%	13%	100%
Crane	Terex T750 Truck Crane	500	Above Ground	1	1	12	12	6	20%	10%	2%	10%
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	Above Ground	1	1	12	12	6	60%	10%	6%	10%
Hydroseeder	FINN Model T120 Hydroseeder	35	Above Ground	1	1	12	12	6	60%	10%	6%	100%
Compressor	Sullair 750H	275	Above Ground	1	1	12	12	6	50%	50%	25%	10%
Generator	Caterpillar XQ45	96	Above Ground	1	1	12	12	6	80%	50%	40%	10%
Log Hauler	Kenworth 900B W/Log Hauler	500	Above Ground	1	1	12	12	6	60%	25%	15%	100%
Harvester	John Deere 759H	247	Above Ground	2	1	12	12	6	60%	50%	30%	10%
Tracked Swing Loader	John Deere 2954D	188	Above Ground	2	1	12	12	6	50%	50%	25%	10%
Chipper	Vermeer WC2300	440	Above Ground	2	1	12	12	5	50%	50%	25%	10%
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	Above Ground	1	1	12	12	6	10%	10%	1%	100%
Site Preparation Stage 4												
Pickup Truck	Ford F-150	365	Above Ground	2	2	8	16	6	20%	100%	20%	100%
Flat Truck	Ford F-650	250	Above Ground	1	2	8	16	6	20%	100%	20%	100%
Rack Truck	Ford F-350 W/Whitney Racks	385	Above Ground	1	2	8	16	6	20%	100%	20%	100%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	4	2	8	16	6	75%	50%	38%	100%
30 Yard Dump Truck	Kenworth W900B	475	Above Ground	2	2	8	16	6	75%	50%	38%	100%
12 Yard Concrete Mixer	Peterbilt 365	455	Above Ground	1	2	8	16	6	20%	10%	2%	10%
Asphalt Flow Boy	Flow Boy 3064	425	Above Ground	1	2	8	16	6	60%	10%	6%	100%
Water Tanker	Peterbilt 340	330	Above Ground	1	2	8	16	6	60%	50%	30%	100%
Box Truck	Chevrolet Express 3500	325	Above Ground	1	2	8	16	6	10%	50%	5%	100%
Boom Truck	Terex BT 5092	300	Above Ground	1	2	8	16	6	20%	100%	20%	10%
Bulldozer	Caterpillar D8T	310	Above Ground	1	2	8	16	6	75%	25%	19%	10%

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Site Preparation Stage 2				26	13											
Pickup Truck	Ford F-150	365	T	8	4	A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2TKS1	SP2EQP1
Flat Truck	Ford F-650	250	T	2	1	A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2TKS1	SP2EQP1
Rack Truck	Ford F-350 W/Whitney Racks	385	T	2	1	A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2TKS1	SP2EQP1
20 Yard Dump Truck	Kenworth T800	525	T	8	4	A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2TKS1	SP2EQP1
30 Yard Dump Truck	Kenworth W900B	475	T	2	1	A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2TKS1	SP2EQP1
Bulldozer	Caterpillar D8T	310	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2OTHE1	SP2EQP1
Standard Backhoe	Caterpillar 450E	124	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2OTHE1	SP2EQP1
Front End Loader	Caterpillar 950H	197	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2OTHE1	SP2EQP1
Excavator	John Deere 450D LC	348	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2OTHE1	SP2EQP1
Roller	Caterpillar CB34 XW	46	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2OTHE1	SP2EQP1
Crane	Terex T750 Truck Crane	500	E			P	A	--	96,739.8	3.66	--	523	26.2	0.152	SP2CRA1	SP2EQP1
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	E			P	A	--	96,739.8	2.74	--	523	10.5	0.152	SP2VSHD1	SP2EQP1
Hydroseeder	FINN Model T120 Hydroseeder	35	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2OTHE1	SP2EQP1
Compressor	Sullair 750H	275	E			P	A	--	96,739.8	1.83	--	523	14.4	0.152	SP2COMP1	SP2EQP1
Generator	Caterpillar XQ45	96	E			P	A	--	96,739.8	1.83	--	523	5.0	0.152	SP2GENR1	SP2EQP1
Log Hauler	Kenworth 900B W/Log Hauler	500	T	2	1	A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2FORE1	SP2EQP1
Harvester	John Deere 759H	247	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2FORE1	SP2EQP1
Tracked Swing Loader	John Deere 2954D	188	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2FORE1	SP2EQP1
Chipper	Vermeer WC2300	440	E			A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2FORE1	SP2EQP1
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	T	2	1	A	A	96,739.9	96,739.8	2.74	1.3	--	--	--	SP2TKS1	SP2EQP1
Site Preparation Stage 4				6	3											
Pickup Truck	Ford F-150	365	T			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4TKS1	S4EQP1
Flat Truck	Ford F-650	250	T	1		A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4TKS1	SP4EQP1
Rack Truck	Ford F-350 W/Whitney Racks	385	T	1		A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4TKS1	SP4EQP1
20 Yard Dump Truck	Kenworth T800	525	T	1	1	A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4TKS1	SP4EQP1
30 Yard Dump Truck	Kenworth W900B	475	T	1	1	A	A	10,330.7	15,652.7	2.74	1.3	--	--	--	SP4RCKE1	SP4EQP1
12 Yard Concrete Mixer	Peterbilt 365	455	CT	1		P	A	--	15,652.7	2.74	--	523	23.9	0.152	SP4CMIX1	SP4EQP1
Asphalt Flow Boy	Flow Boy 3064	425	T	1	1	A	A	5,103.9	5,104.0	2.74	1.3	--	--	--	SP4RODE1	SP4RODE1
Water Tanker	Peterbilt 340	330	T			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4TKS1	SP4EQP1
Box Truck	Chevrolet Express 3500	325	T			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4TKS1	SP4EQP1
Boom Truck	Terex BT 5092	300	E			P	A	--	15,652.7	2.74	--	523	15.7	0.152	SP4BTK1	SP4EQP1
Bulldozer	Caterpillar D8T	310	E			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4OTHE1	SP4EQP1

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s)	$PM_{2.5}$ 24-Hr Emission per Eqp ($g/s/m^2$)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ Annual Emission per Eqp (g/s)	PM2.5 Annual Emission per Eqp (g/s/m2)	PM_{10} EF (g/hp-hr)	PM_{10} 24-Hr Emission per Eqp (g/s)	PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)	NOx EF (g/hp-hr)	NOx Annual Emission per Eqp (g/s)	NOx Annual Emission per Eqp (g/s/m2)	CO EF (g/hp-hr)	CO 1-Hr Emission per Eqp (g/s)	CO 1-Hr Emission per Eqp ($g/s/m^2$)	CO EF (g/hp-hr)	CO 8-Hr Emission per Eqp (g/s)	CO 8-Hr Emission per Eqp ($g/s/m^2$)
Site Preparation Stage 2																				
Pickup Truck	Ford F-150	365	0.003		1.60E-10	0.003		7.98E-11	0.003		1.73E-10	0.069		2.02E-09	0.052		3.05E-09	0.052		3.05E-09
Flat Truck	Ford F-650	250	0.004		3.99E-11	0.004		1.99E-11	0.004		4.33E-11	0.101		5.05E-10	0.076		7.62E-10	0.076		7.62E-10
Rack Truck	Ford F-350 W/Whitney Racks	385	0.003		3.99E-11	0.003		1.99E-11	0.003		4.33E-11	0.066		5.05E-10	0.050		7.62E-10	0.050		7.62E-10
20 Yard Dump Truck	Kenworth T800	525	0.002		1.60E-10	0.002		7.98E-11	0.002		1.73E-10	0.048		2.02E-09	0.036		3.05E-09	0.036		3.05E-09
30 Yard Dump Truck	Kenworth W900B	475	0.002		3.99E-11	0.002		1.99E-11	0.002		4.33E-11	0.053		5.05E-10	0.040		7.62E-10	0.040		7.62E-10
Bulldozer	Caterpillar D8T	310	0.100		6.66E-09	0.100		1.67E-09	0.103		6.87E-09	1.917		3.20E-07	0.746		6.64E-07	0.746		4.98E-07
Standard Backhoe	Caterpillar 450E	124	0.075		2.02E-09	0.075		2.02E-09	0.078		2.08E-09	1.117		2.98E-07	0.672		2.39E-07	0.672		1.79E-07
Front End Loader	Caterpillar 950H	197	0.057		2.41E-09	0.057		1.21E-09	0.059		2.48E-09	1.051		2.23E-07	0.560		3.17E-07	0.560		2.38E-07
Excavator	John Deere 450D LC	348	0.104		1.56E-08	0.104		1.17E-08	0.107		1.61E-08	1.417		1.59E-06	0.479		9.57E-07	0.479		7.18E-07
Roller	Caterpillar CB34 XW	46	0.274		1.81E-08	0.274		4.53E-09	0.283		1.87E-08	2.617		4.32E-08	0.909		1.20E-07	0.909		6.01E-08
Crane	Terex T750 Truck Crane	500	0.054	1.50E-04		0.054		1.55E-10	0.056	1.55E-04		1.684		4.84E-08	0.430	5.97E-02		0.430	1.19E-02	
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	0.054	1.79E-04		0.054		1.85E-10	0.055	1.84E-04		1.299		4.48E-08	0.270	1.50E-02		0.270	9.01E-03	
Hydroseeder	FINN Model T120 Hydroseeder	35	0.161		9.73E-09 5.45E-08	0.161		9.73E-10	0.166		1.00E-08	1.910		1.15E-08	0.608		6.11E-08	0.608		3.66E-08
Compressor	Sullair 750H	275	0.053	2.01E-04		0.053		1.04E-09	0.054	2.07E-04		1.468		2.90E-07	0.302	2.30E-02		0.302	1.15E-02	
Generator	Caterpillar XQ45	96	0.099	2.11E-04		0.099		1.09E-09	0.102	2.18E-04		2.190		2.41E-07	1.196	3.19E-02		1.196	2.55E-02	
Log Hauler	Kenworth 900B W/Log Hauler	500	0.002		3.99E-11	0.002		1.99E-11	0.002		4.33E-11	0.051		5.05E-10	0.038		7.62E-10	0.038		7.62E-10
Harvester	John Deere 759H	247	0.104		8.85E-09	0.104		4.43E-09	0.107		9.12E-09	1.417		6.03E-07	0.479		6.79E-07	0.479		4.07E-07
Tracked Swing Loader	John Deere 2954D	188	0.102		5.50E-09	0.102		2.75E-09	0.105		5.67E-09	1.535		4.14E-07	0.505		5.45E-07	0.505		2.72E-07
Chipper	Vermeer WC2300	440	0.051		6.46E-09 2.08E-08	0.051		3.23E-09	0.053		6.66E-09	2.005		1.27E-06	0.619		1.56E-06	0.619		7.82E-07
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	0.003		3.99E-11 4.79E-10	0.003		1.99E-11 3.52E-08	0.004		4.33E-11	0.084		5.05E-10 5.40E-06	0.064		7.62E-10	0.064		7.62E-10
Site Preparation Stage 4																				
Pickup Truck	Ford F-150	365	0.003			0.003			0.003			0.069			0.052			0.052		
Flat Truck	Ford F-650	250	0.004		9.24E-11	0.004			0.004		1.00E-10	0.101			0.076		1.77E-09	0.076		1.77E-09
Rack Truck	Ford F-350 W/Whitney Racks	385	0.003		9.24E-11	0.003			0.003		1.00E-10	0.066			0.050		1.77E-09	0.050		1.77E-09
20 Yard Dump Truck	Kenworth T800	525	0.002		9.24E-11	0.002		9.24E-11	0.002		1.00E-10	0.048		2.34E-09	0.036		1.77E-09	0.036		1.77E-09
30 Yard Dump Truck	Kenworth W900B	475	0.002		1.40E-10	0.002		9.24E-11	0.002		1.52E-10	0.053		2.34E-09	0.040		2.67E-09	0.040		2.67E-09
12 Yard Concrete Mixer	Peterbilt 365	455	0.002	1.30E-06		0.002			0.002	1.42E-06		0.056			0.042	2.49E-04		0.042	2.49E-04	
Asphalt Flow Boy	Flow Boy 3064	425	0.002		2.83E-10	0.002		2.83E-10	0.003		3.08E-10	0.060		7.18E-09	0.045		5.41E-09	0.045		5.41E-09
Water Tanker	Peterbilt 340	330	0.003			0.003			0.003			0.077			0.058			0.058		
Box Truck	Chevrolet Express 3500	325	0.003			0.003			0.003			0.078			0.059			0.059		
Boom Truck	Terex BT 5092	300	0.108	1.80E-04		0.108		1.15E-08	0.112	1.86E-04		1.386		1.48E-06	0.555	4.62E-02		0.555	9.24E-03	
Bulldozer	Caterpillar D8T	310	0.100		4.12E-08	0.100		1.03E-08	0.103		4.25E-08	1.917		1.98E-06	0.746		4.10E-06	0.746		3.08E-06

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours / Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	Pollutant Load after Control (%)
Standard Backhoe	Caterpillar 450E	124	Above Ground	1	2	8	16	6	75%	100%	75%	10%
Front End Loader	Caterpillar 950H	197	Above Ground	2	2	8	16	6	75%	100%	75%	10%
Excavator	John Deere 450D LC	348	Above Ground	1	2	8	16	6	75%	50%	38%	10%
Grader	John Deere 770G/GP	245	Above Ground	1	2	8	16	6	50%	50%	25%	10%
Crawler Dozer	JOhn Deere 770J	115	Above Ground	1	2	8	16	6	60%	25%	15%	10%
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	Above Ground	1	2	8	16	6	75%	50%	38%	10%
Rock Crusher	McCloskey MCB C50	350	Above Ground	1	2	8	16	6	50%	50%	25%	10%
Rock Cutter	Vermeer T955	415	Above Ground	1	2	8	16	6	70%	50%	35%	10%
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	Above Ground	1	2	8	16	6	70%	10%	7%	10%
Paver	Caterpillar AP-1000D	224	Above Ground	1	2	8	16	6	50%	10%	5%	10%
Roller	Caterpillar CB34 XW	46	Above Ground	1	2	8	16	6	50%	10%	5%	100%
Crane	Terex T750 Truck Crane	500	Above Ground	1	2	8	16	6	20%	10%	2%	10%
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	Above Ground	1	2	8	16	6	60%	10%	6%	10%
Hydroseeder	Finn Model T120 Hydroseeder	35	Above Ground	1	2	8	16	6	60%	25%	15%	100%
Compressor	Sullair 750H	275	Above Ground	1	2	8	16	6	50%	50%	25%	10%
Generator	Caterpillar XQ45	96	Above Ground	1	2	8	16	6	80%	50%	40%	10%
Pump	Honda WT40X	11	Above Ground	1	2	8	16	6	50%	10%	5%	100%
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	Above Ground	1	2	8	16	6	10%	10%	1%	100%

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Standard Backhoe	Caterpillar 450E	124	E			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4OTHE1	SP4EQP1
Front End Loader	Caterpillar 950H	197	E			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4OTHE1	SP4EQP1
Excavator	John Deere 450D LC	348	E			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4OTHE1	SP4EQP1
Grader	John Deere 770G/GP	245	E			A	A	5,103.9	5,104.0	2.74	1.3	--	--	--	SP4RODE1	SP4RODE1
Crawler Dozer	JOhn Deere 770J	115	E			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4OTHE1	SP4EQP1
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	E			P	A	--	15,652.7	2.74	--	523	18.2	0.152	SP4RCKB1	SP4EQP1
Rock Crusher	McCloskey MCB C50	350	E			P	A	--	15,652.7	2.74	--	523	18.3	0.152	SP4RCKC1	SP4EQP1
Rock Cutter	Vermeer T955	415	E			A	A	10,330.7	15,652.7	2.74	1.3	--	--	--	SP4RCKE1	SP4EQP1
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	E			P	A	--	15,652.7	2.74	--	523	18.2	0.152	SP4RCKD1	SP4EQP1
Paver	Caterpillar AP-1000D	224	E			A	A	5,103.9	5,104.0	2.74	1.3	--	--	--	SP4RODE1	SP4RODE1
Roller	Caterpillar CB34 XW	46	E			A	A	5,103.9	5,104.0	2.74	1.3	--	--	--	SP4RODE1	SP4RODE1
Crane	Terex T750 Truck Crane	500	E			P	A	--	15,652.7	3.66	--	523	26.2	0.152	SP4CRA1	SP4EQP1
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	E			P	A	--	15,652.7	2.74	--	523	10.5	0.152	SP4VSHD1	SP4EQP1
Hydroseeder	Finn Model T120 Hydroseeder	35	E			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4OTHE1	SP4EQP1
Compressor	Sullair 750H	275	E			P	A	--	15,652.7	1.83	--	523	14.4	0.152	SP4COMP1	SP4EQP1
Generator	Caterpillar XQ45	96	E			P	A	--	15,652.7	1.83	--	523	5.0	0.152	SP4GENR1	SP4EQP1
Pump	Honda WT40X	11	E			P	A	--	15,652.7	1.83	--	523	0.6	0.152	SP4WPMP1	SP4EQP1
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	T			A	A	15,652.6	15,652.7	2.74	1.3	--	--	--	SP4TKS1	SP4EQP1

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s)	$PM_{2.5}$ 24-Hr Emission per Eqp ($g/s/m^2$)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ Annual Emission per Eqp (g/s)	PM2.5 Annual Emission per Eqp (g/s/m2)	PM_{10} EF (g/hp-hr)	PM_{10} 24-Hr Emission per Eqp (g/s)	PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)	NOx EF (g/hp-hr)	NOx Annual Emission per Eqp (g/s)	NOx Annual Emission per Eqp (g/s/m2)	CO EF (g/hp-hr)	CO 1-Hr Emission per Eqp (g/s)	CO 1-Hr Emission per Eqp ($g/s/m^2$)	CO EF (g/hp-hr)	CO 8-Hr Emission per Eqp (g/s)	CO 8-Hr Emission per Eqp ($g/s/m^2$)
Standard Backhoe	Caterpillar 450E	124	0.075		1.25E-08	0.075		1.25E-08	0.078		1.28E-08	1.117		1.84E-06	0.672		1.48E-06	0.672		1.11E-06
Front End Loader	Caterpillar 950H	197	0.057		2.98E-08	0.057		2.98E-08	0.059		3.07E-08	1.051		5.51E-06	0.560		3.92E-06	0.560		2.94E-06
Excavator	John Deere 450D LC	348	0.104		4.82E-08	0.104		2.41E-08	0.107		4.97E-08	1.417		3.28E-06	0.479		2.96E-06	0.479		2.22E-06
Grader	John Deere 770G/GP	245	0.102		6.82E-08	0.102		3.41E-08	0.105		7.03E-08	1.517		5.06E-06	0.501		6.68E-06	0.501		3.34E-06
Crawler Dozer	JOhn Deere 770J	115	0.138		1.69E-08	0.138		4.21E-09	0.142		1.74E-08	1.687		5.16E-07	0.670		1.37E-06	0.670		8.21E-07
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	0.102	7.38E-04		0.102		2.36E-08	0.105	7.60E-04		1.751		4.05E-06	0.675	6.53E-02		0.675	4.89E-02	
Rock Crusher	McCloskey MCB C50	350	0.054	2.62E-04		0.054		8.36E-09	0.055	2.70E-04		1.730		2.69E-06	0.461	4.48E-02		0.461	2.24E-02	
Rock Cutter	Vermeer T955	415	0.102		7.95E-08 7.96E-08	0.102		2.62E-08	0.105		8.19E-08	1.751		4.51E-06	0.675		7.53E-06	0.675		5.27E-06
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	0.102	6.88E-04		0.102		4.40E-09	0.105	7.10E-04		1.751		7.57E-07	0.675	6.53E-02		0.675	4.57E-02	
Paver	Caterpillar AP-1000D	224	0.100		6.12E-08	0.100		6.12E-09	0.103		6.30E-08	1.646		1.00E-06	0.528		6.44E-06	0.528		3.22E-06
Roller	Caterpillar CB34 XW	46	0.274		3.43E-07 4.73E-07	0.274		3.43E-08 7.48E-08	0.283		3.54E-07	2.617		3.28E-07 6.40E-06	0.909		2.28E-06	0.909		1.14E-06
Crane	Terex T750 Truck Crane	500	0.054	1.50E-04		0.054		9.58E-10	0.056	1.55E-04		1.684		2.99E-07	0.430	5.97E-02		0.430	1.19E-02	
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	0.054	1.79E-04		0.054		1.14E-09	0.055	1.84E-04		1.299		2.77E-07	0.270	1.50E-02		0.270	9.01E-03	
Hydroseeder	Finn Model T120 Hydroseeder	35	0.161		6.01E-08 2.09E-07	0.161		1.50E-08	0.166		6.20E-08	1.910		1.78E-07	0.608		3.77E-07	0.608		2.26E-07
Compressor	Sullair 750H	275	0.053	2.01E-04		0.053		6.41E-09	0.054	2.07E-04		1.468		1.79E-06	0.302	2.30E-02		0.302	1.15E-02	
Generator	Caterpillar XQ45	96	0.099	2.11E-04		0.099		6.74E-09	0.102	2.18E-04		2.190		1.49E-06	1.196	3.19E-02		1.196	2.55E-02	
Pump	Honda WT40X	11	0.077	1.18E-04		0.077		7.52E-10	0.084	1.28E-04		1.416		1.38E-08	206.299	6.30E-01		206.299	3.15E-01	
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	0.003		2.77E-10	0.003		1.86E-07	0.004			0.084		3.07E-05	0.064			0.064		

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours / Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	Pollutant Load after Control (%)
Site Preparation Stage 5												
Pickup Truck	Ford F-150	365	Above Ground	1	2	8	16	6	20%	100%	20%	100%
Flat Truck	Ford F-650	250	Above Ground	1	2	8	16	6	20%	100%	20%	100%
Rack Truck	Ford F-350 W/Whitney Racks	385	Above Ground	1	2	8	16	6	20%	100%	20%	100%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	1	2	8	16	6	75%	50%	38%	100%
30 Yard Dump Truck	Kenworth W900B	475	Above Ground	1	2	8	16	6	75%	50%	38%	100%
12 Yard Concrete Mixer	Peterbilt 365	455	Above Ground	1	2	8	16	6	20%	10%	2%	10%
Asphalt Flow Boy	Flow Boy 3064	425	Above Ground	1	2	8	16	6	60%	10%	6%	100%
Water Tanker	Peterbilt 340	330	Above Ground	1	2	8	16	6	60%	50%	30%	100%
Box Truck	Chevrolet Express 3500	325	Above Ground	1	2	8	16	6	10%	25%	3%	100%
Boom Truck	Terex BT 5092	300	Above Ground	1	2	8	16	6	20%	25%	5%	10%
Bulldozer	Caterpillar D8T	310	Above Ground	1	2	8	16	6	75%	25%	19%	10%
Standard Backhoe	Caterpillar 450E	124	Above Ground	1	2	8	16	6	75%	100%	75%	10%
Front End Loader	Caterpillar 950H	197	Above Ground	1	2	8	16	6	75%	100%	75%	10%
Excavator	John Deere 450D LC	348	Above Ground	1	2	8	16	6	75%	50%	38%	10%
Grader	John Deere 770G/GP	245	Above Ground	1	2	8	16	6	50%	25%	13%	10%
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	Above Ground	1	2	8	16	6	75%	50%	38%	10%
Rock Crusher	McCloskey MCB C50	350	Above Ground	1	2	8	16	6	50%	50%	25%	10%
Rock Cutter	Vermeer T955	415	Above Ground	1	2	8	16	6	70%	50%	35%	10%
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	Above Ground	1	2	8	16	6	70%	10%	7%	10%
Paver	Caterpillar AP-1000D	224	Above Ground	1	2	8	16	6	50%	10%	5%	10%
Roller	Caterpillar CB34 XW	46	Above Ground	1	2	8	16	6	50%	10%	5%	100%
Crane	Terex T750 Truck Crane	500	Above Ground	1	2	8	16	6	20%	10%	2%	10%
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	Above Ground	1	2	8	16	6	60%	10%	6%	10%
Hydroseeder	Finn Model T120 Hydroseeder	35	Above Ground	1	2	8	16	6	60%	25%	15%	100%
Compressor	Sullair 750H	275	Above Ground	1	2	8	16	6	50%	50%	25%	10%

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Site Preparation Stage 5				6	3											
Pickup Truck	Ford F-150	365	T			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5TKS1	SP5EQP1
Flat Truck	Ford F-650	250	T	1		A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5TKS1	SP5EQP1
Rack Truck	Ford F-350 W/Whitney Racks	385	T	1		A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5TKS1	SP5EQP1
20 Yard Dump Truck	Kenworth T800	525	T	1	1	A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5TKS1	SP5EQP1
30 Yard Dump Truck	Kenworth W900B	475	T	1	1	A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5RCKE1	SP5EQP1
12 Yard Concrete Mixer	Peterbilt 365	455	CT	1		P	A	--	10,330.7	2.74	--	523	23.9	0.152	SP5CMIX1	SP5EQP1
Asphalt Flow Boy	Flow Boy 3064	425	T	1	1	A	A	5,014.2	5,014.2	2.74	1.3	--	--	--	SP5RODE1	SP5RODE1
Water Tanker	Peterbilt 340	330	T			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5TKS1	SP5EQP1
Box Truck	Chevrolet Express 3500	325	T			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5TKS1	SP5EQP1
Boom Truck	Terex BT 5092	300	E			P	A	--	10,330.7	2.74	--	523	15.7	0.152	SP5BTK1	SP5EQP1
Bulldozer	Caterpillar D8T	310	E			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5OTHE1	SP5EQP1
Standard Backhoe	Caterpillar 450E	124	E			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5OTHE1	SP5EQP1
Front End Loader	Caterpillar 950H	197	E			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5OTHE1	SP5EQP1
Excavator	John Deere 450D LC	348	E			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5OTHE1	SP5EQP1
Grader	John Deere 770G/GP	245	E			A	A	5,014.2	5,014.2	2.74	1.3	--	--	--	SP5RODE1	SP5RODE1
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	E			P	A	--	10,330.7	2.74	--	523	18.2	0.152	SP5RCKB1	SP5EQP1
Rock Crusher	McCloskey MCB C50	350	E			P	A	--	10,330.7	2.74	--	523	18.3	0.152	SP5RCKC1	SP5EQP1
Rock Cutter	Vermeer T955	415	E			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5RCKE1	SP5EQP1
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	E			P	A	--	10,330.7	2.74	--	523	18.2	0.152	SP5RCKD1	SP5EQP1
Paver	Caterpillar AP-1000D	224	E			A	A	5,014.2	5,014.2	2.74	1.3	--	--	--	SP5RODE1	SP5RODE1
Roller	Caterpillar CB34 XW	46	E			A	A	5,014.2	5,014.2	2.74	1.3	--	--	--	SP5RODE1	SP5RODE1
Crane	Terex T750 Truck Crane	500	E			P	A	--	10,330.7	3.66	--	523	26.2	0.152	SP5CRA1	SP5EQP1
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	E			P	A	--	10,330.7	2.74	1.3	--	--	--	SP5VSHD1	SP5EQP1
Hydroseeder	Finn Model T120 Hydroseeder	35	E			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5OTHE1	SP5EQP1
Compressor	Sullair 750H	275	E			P	A	--	10,330.7	1.83	--	523	14.4	0.152	SP5COMP1	SP5EQP1

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s)	$PM_{2.5}$ 24-Hr Emission per Eqp ($g/s/m^2$)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ Annual Emission per Eqp (g/s)	PM2.5 Annual Emission per Eqp (g/s/m2)	PM_{10} EF (g/hp-hr)	PM_{10} 24-Hr Emission per Eqp (g/s)	PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)	NOx EF (g/hp-hr)	NOx Annual Emission per Eqp (g/s)	NOx Annual Emission per Eqp (g/s/m2)	CO EF (g/hp-hr)	CO 1-Hr Emission per Eqp (g/s)	CO 1-Hr Emission per Eqp ($g/s/m^2$)	CO EF (g/hp-hr)	CO 8-Hr Emission per Eqp (g/s)	CO 8-Hr Emission per Eqp ($g/s/m^2$)
Site Preparation Stage 5																				
Pickup Truck	Ford F-150	365	0.003			0.003			0.003			0.069			0.052			0.052		
Flat Truck	Ford F-650	250	0.004		1.40E-10	0.004			0.004		1.52E-10	0.101			0.076		2.67E-09	0.076		2.67E-09
Rack Truck	Ford F-350 W/Whitney Racks	385	0.003		1.40E-10	0.003			0.003		1.52E-10	0.066			0.050		2.67E-09	0.050		2.67E-09
20 Yard Dump Truck	Kenworth T800	525	0.002		1.40E-10	0.002		1.40E-10	0.002		1.52E-10	0.048		3.55E-09	0.036		2.67E-09	0.036		2.67E-09
30 Yard Dump Truck	Kenworth W900B	475	0.002		1.40E-10	0.002		1.40E-10	0.002		1.52E-10	0.053		3.55E-09	0.040		2.67E-09	0.040		2.67E-09
12 Yard Concrete Mixer	Peterbilt 365	455	0.002	1.30E-06		0.002			0.002	1.42E-06		0.056			0.042	2.49E-04		0.042	2.49E-04	
Asphalt Flow Boy	Flow Boy 3064	425	0.002		2.89E-10	0.002		2.89E-10	0.003		3.14E-10	0.060		7.31E-09	0.045		5.51E-09	0.045		5.51E-09
Water Tanker	Peterbilt 340	330	0.003			0.003			0.003			0.077			0.058			0.058		
Box Truck	Chevrolet Express 3500	325	0.003			0.003			0.003			0.078			0.059			0.059		
Boom Truck	Terex BT 5092	300	0.108	1.80E-04		0.108		4.37E-09	0.112	1.86E-04		1.386		5.59E-07	0.555	4.62E-02		0.555	9.24E-03	
Bulldozer	Caterpillar D8T	310	0.100		6.24E-08	0.100		1.56E-08	0.103		6.43E-08	1.917		3.00E-06	0.746		6.22E-06	0.746		4.66E-06
Standard Backhoe	Caterpillar 450E	124	0.075		1.89E-08	0.075		1.89E-08	0.078		1.95E-08	1.117		2.79E-06	0.672		2.24E-06	0.672		1.68E-06
Front End Loader	Caterpillar 950H	197	0.057		2.26E-08	0.057		2.26E-08	0.059		2.33E-08	1.051		4.18E-06	0.560		2.97E-06	0.560		2.23E-06
Excavator	John Deere 450D LC	348	0.104		7.30E-08	0.104		3.65E-08	0.107		7.52E-08	1.417		4.97E-06	0.479		4.48E-06	0.479		3.36E-06
Grader	John Deere 770G/GP	245	0.102		6.94E-08	0.102		1.73E-08	0.105		7.15E-08	1.517		2.57E-06	0.501		6.80E-06	0.501		3.40E-06
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	0.102	7.38E-04		0.102		3.57E-08	0.105	7.60E-04		1.751		6.14E-06	0.675	6.53E-02		0.675	4.89E-02	
Rock Crusher	McCloskey MCB C50	350	0.054	2.62E-04		0.054		1.27E-08	0.055	2.70E-04		1.730		4.07E-06	0.461	4.48E-02		0.461	2.24E-02	
Rock Cutter	Vermeer T955	415	0.102		7.95E-08 7.96E-08	0.102		3.97E-08	0.105		8.19E-08	1.751		6.84E-06	0.675		7.53E-06	0.675		5.27E-06
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	0.102	6.88E-04		0.102		6.66E-09	0.105	7.10E-04		1.751		1.15E-06	0.675	6.53E-02		0.675	4.57E-02	
Paver	Caterpillar AP-1000D	224	0.100		6.22E-08	0.100		6.22E-09	0.103		6.42E-08	1.646		1.02E-06	0.528		6.56E-06	0.528		3.28E-06
Roller	Caterpillar CB34 XW	46	0.274		3.49E-07 4.81E-07	0.274		3.49E-08 5.88E-08	0.283		3.60E-07	2.617		3.33E-07 3.94E-06	0.909		2.32E-06	0.909		1.16E-06
Crane	Terex T750 Truck Crane	500	0.054	1.50E-04		0.054		1.45E-09	0.056	1.55E-04		1.684		4.53E-07	0.430	5.97E-02		0.430	1.19E-02	
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	0.054	1.79E-04		0.054		1.73E-09	0.055	1.84E-04		1.299		4.19E-07	0.270	1.50E-02		0.270	9.01E-03	
Hydroseeder	Finn Model T120 Hydroseeder	35	0.161		9.11E-08 2.68E-07	0.161		2.28E-08	0.166		9.39E-08	1.910		2.70E-07	0.608		5.72E-07	0.608		3.43E-07
Compressor	Sullair 750H	275	0.053	2.01E-04		0.053		9.71E-09	0.054	2.07E-04		1.468		2.71E-06	0.302	2.30E-02		0.302	1.15E-02	

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours / Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	Pollutant Load after Control (%)
Generator	Caterpillar XQ45	96	Above Ground	1	2	8	16	6	80%	50%	40%	10%
Pump	Honda WT40X	11	Above Ground	1	2	8	16	6	50%	10%	5%	100%
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	Above Ground	1	2	8	16	6	10%	10%	1%	100%
Site Preparation Stage 6												
Pickup Truck	Ford F-150	365	Above Ground	1	1	12	12	6	20%	100%	20%	100%
Flat Truck	Ford F-650	250	Above Ground	1	1	12	12	6	20%	100%	20%	100%
Rack Truck	Ford F-350 W/Whitney Racks	385	Above Ground	1	1	12	12	6	20%	100%	20%	100%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	1	1	12	12	6	75%	50%	38%	100%
30 Yard Dump Truck	Kenworth W900B	475	Above Ground	1	1	12	12	6	75%	50%	38%	100%
12 Yard Concrete Mixer	Peterbilt 365	455	Above Ground	1	1	12	12	6	20%	10%	2%	10%
Asphalt Flow Boy	Flow Boy 3064	425	Above Ground	1	1	12	12	6	60%	10%	6%	100%
Water Tanker	Peterbilt 340	330	Above Ground	1	1	12	12	6	60%	50%	30%	100%
Box Truck	Chevrolet Express 3500	325	Above Ground	1	1	12	12	6	10%	25%	3%	100%
Boom Truck	Terex BT 5092	300	Above Ground	1	1	12	12	6	20%	25%	5%	10%
Bulldozer	Caterpillar D8T	310	Above Ground	1	1	12	12	6	75%	25%	19%	10%
Standard Backhoe	Caterpillar 450E	124	Above Ground	1	1	12	12	6	75%	100%	75%	10%
Front End Loader	Caterpillar 950H	197	Above Ground	1	1	12	12	6	75%	100%	75%	10%
Excavator	John Deere 450D LC	348	Above Ground	1	1	12	12	6	75%	50%	38%	10%
Grader	John Deere 770G/GP	245	Above Ground	1	1	12	12	6	50%	25%	13%	10%
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	Above Ground	1	1	12	12	6	75%	50%	38%	10%
Rock Crusher	McCloskey MCB C50	350	Above Ground	1	1	12	12	6	50%	50%	25%	10%
Rock Cutter	Vermeer T955	415	Above Ground	1	1	12	12	6	70%	50%	35%	10%
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	Above Ground	1	1	12	12	6	70%	10%	7%	10%
Paver	Caterpillar AP-1000D	224	Above Ground	1	1	12	12	6	50%	10%	5%	10%
Roller	Caterpillar CB34 XW	46	Above Ground	1	1	12	12	6	50%	10%	5%	100%
Crane	Terex T750 Truck Crane	500	Above Ground	1	1	12	12	6	20%	10%	2%	10%
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	Above Ground	1	1	12	12	6	60%	10%	6%	10%
Hydroseeder	Finn Model T120 Hydroseeder	35	Above Ground	1	1	12	12	6	60%	25%	15%	100%
Compressor	Sullair 750H	275	Above Ground	1	1	12	12	6	50%	50%	25%	10%
Generator	Caterpillar XQ45	96	Above Ground	1	1	12	12	6	80%	50%	40%	10%
Pump	Honda WT40X	11	Above Ground	1	1	12	12	6	50%	10%	5%	100%
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	Above Ground	1	1	12	12	6	10%	10%	1%	100%

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Generator	Caterpillar XQ45	96	E			P	A	--	10,330.7	1.83	--	523	5.0	0.152	SP5GENR1	SP5EQP1
Pump	Honda WT40X	11	E			P	A	--	10,330.7	1.83	--	523	0.6	0.152	SP5WPMP1	SP5EQP1
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	T			A	A	10,330.7	10,330.7	2.74	1.3	--	--	--	SP5TKS1	SP5EQP1
Site Preparation Stage 6				6	3											
Pickup Truck	Ford F-150	365	T			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6TKS1	SP6EQP1
Flat Truck	Ford F-650	250	T	1		A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6TKS1	SP6EQP1
Rack Truck	Ford F-350 W/Whitney Racks	385	T	1		A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6TKS1	SP6EQP1
20 Yard Dump Truck	Kenworth T800	525	T	1	1	A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6TKS1	SP6EQP1
30 Yard Dump Truck	Kenworth W900B	475	T	1	1	A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6RCKE1	SP6EQP1
12 Yard Concrete Mixer	Peterbilt 365	455	CT	1		P	A	--	9,327.2	2.74	--	523	23.9	0.152	SP6CMIX1	SP6EQP1
Asphalt Flow Boy	Flow Boy 3064	425	T	1	1	A	A	3953.8	3,953.7	2.74	1.3	--	--	--	SP6RODE1	SP6RODE1
Water Tanker	Peterbilt 340	330	T			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6TKS1	SP6EQP1
Box Truck	Chevrolet Express 3500	325	T			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6TKS1	SP6EQP1
Boom Truck	Terex BT 5092	300	E			P	A	--	9,327.2	2.74	--	523	15.7	0.152	SP6BTK1	SP6EQP1
Bulldozer	Caterpillar D8T	310	E			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6OTHE1	SP6EQP1
Standard Backhoe	Caterpillar 450E	124	E			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6OTHE1	SP6EQP1
Front End Loader	Caterpillar 950H	197	E			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6OTHE1	SP6EQP1
Excavator	John Deere 450D LC	348	E			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6OTHE1	SP6EQP1
Grader	John Deere 770G/GP	245	E			A	A	3953.8	3,953.7	2.74	1.3	--	--	--	SP6RODE1	SP6RODE1
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	E			P	A	--	9,327.2	1.83	--	523	18.2	0.152	SP6RCKB1	SP6EQP1
Rock Crusher	McCloskey MCB C50	350	E			P	A	--	9,327.2	1.83	--	523	18.3	0.152	SP6RCKC1	SP6EQP1
Rock Cutter	Vermeer T955	415	E			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6RCKE1	SP6EQP1
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	E			P	A	--	9,327.2	1.83	--	523	18.2	0.152	SP6RCKD1	SP6EQP1
Paver	Caterpillar AP-1000D	224	E			A	A	3953.8	3,953.7	2.74	1.3	--	--	--	SP6RODE1	SP6RODE1
Roller	Caterpillar CB34 XW	46	E			A	A	3953.8	3,953.7	2.74	1.3	--	--	--	SP6RODE1	SP6RODE1
Crane	Terex T750 Truck Crane	500	E			P	A	--	9,327.2	3.66	--	523	26.2	0.152	SP6CRA1	SP6EQP1
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	E			P	A	--	9,327.2	2.74	--	523	10.5	0.152	SP6VSHD1	SP6EQP1
Hydroseeder	Finn Model T120 Hydroseeder	35	E			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6OTHE1	SP6EQP1
Compressor	Sullair 750H	275	E			P	A	--	9,327.2	1.83	--	523	14.4	0.152	SP6COMP1	SP6EQP1
Generator	Caterpillar XQ45	96	E			P	A	--	9,327.2	1.83	--	523	5.0	0.152	SP6GENR1	SP6EQP1
Pump	Honda WT40X	11	E			P	A	--	9,327.2	1.83	--	523	0.6	0.152	SP6WPMP1	SP6EQP1
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	T			A	A	9,327.2	9,327.2	2.74	1.3	--	--	--	SP6TKS1	SP6EQP1

West Site - Peak Period 1: Site Preparation
Nonroad Emissions

Short-Term Peak Period - (May 2013)
Annual Peak Period - (Year 2013)

Equipment	Model	Engine Size (hp)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s/m^2)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ Annual Emission per Eqp (g/s)	PM2.5 Annual Emission per Eqp (g/s/m2)	PM_{10} EF (g/hp-hr)	PM_{10} 24-Hr Emission per Eqp (g/s)	PM_{10} 24-Hr Emission per Eqp (g/s/m^2)	NOx EF (g/hp-hr)	NOx Annual Emission per Eqp (g/s)	NOx Annual Emission per Eqp (g/s/m2)	CO EF (g/hp-hr)	CO 1-Hr Emission per Eqp (g/s)	CO 1-Hr Emission per Eqp (g/s/m^2)	CO EF (g/hp-hr)	CO 8-Hr Emission per Eqp (g/s)	CO 8-Hr Emission per Eqp (g/s/m^2)
Generator	Caterpillar XQ45	96	0.099	2.11E-04		0.099		1.02E-08	0.102	2.18E-04		2.190		2.26E-06	1.196	3.19E-02		1.196	2.55E-02	
Pump	Honda WT40X	11	0.077	1.18E-04		0.077		1.14E-09	0.084	1.28E-04		1.416		2.09E-08	206.299	6.30E-01		206.299	3.15E-01	
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	0.003			0.003			0.004			0.084			0.064			0.064		
					4.20E-10			2.40E-07						3.98E-05						
Site Preparation Stage 6																				
Pickup Truck	Ford F-150	365	0.003			0.003			0.003			0.069			0.052			0.052		
Flat Truck	Ford F-650	250	0.004		2.07E-10	0.004			0.004		2.25E-10	0.101			0.076		3.95E-09	0.076		3.95E-09
Rack Truck	Ford F-350 W/Whitney Racks	385	0.003		2.07E-10	0.003			0.003		2.25E-10	0.066			0.050		3.95E-09	0.050		3.95E-09
20 Yard Dump Truck	Kenworth T800	525	0.002		2.07E-10	0.002		2.07E-10	0.002		2.25E-10	0.048		5.24E-09	0.036		3.95E-09	0.036		3.95E-09
30 Yard Dump Truck	Kenworth W900B	475	0.002		2.07E-10	0.002		2.07E-10	0.002		2.25E-10	0.053		5.24E-09	0.040		3.95E-09	0.040		3.95E-09
12 Yard Concrete Mixer	Peterbilt 365	455	0.002	1.74E-06		0.002			0.002	1.89E-06		0.056			0.042	3.32E-04		0.042	3.32E-04	
Asphalt Flow Boy	Flow Boy 3064	425	0.002		4.88E-10	0.002		4.88E-10	0.003		5.30E-10	0.060		1.24E-08	0.045		9.32E-09	0.045		9.32E-09
Water Tanker	Peterbilt 340	330	0.003			0.003			0.003			0.077			0.058			0.058		
Box Truck	Chevrolet Express 3500	325	0.003			0.003			0.003			0.078			0.059			0.059		
Boom Truck	Terex BT 5092	300	0.108	1.80E-04		0.108		4.84E-09	0.112	1.86E-04		1.386		6.19E-07	0.555	4.62E-02		0.555	9.24E-03	
Bulldozer	Caterpillar D8T	310	0.100		6.91E-08	0.100		1.73E-08	0.103		7.13E-08	1.917		3.32E-06	0.746		6.88E-06	0.746		5.16E-06
Standard Backhoe	Caterpillar 450E	124	0.075		2.09E-08	0.075		2.09E-08	0.078		2.16E-08	1.117		3.09E-06	0.672		2.48E-06	0.672		1.86E-06
Front End Loader	Caterpillar 950H	197	0.057		2.50E-08	0.057		2.50E-08	0.059		2.58E-08	1.051		4.63E-06	0.560		3.29E-06	0.560		2.47E-06
Excavator	John Deere 450D LC	348	0.104		8.08E-08	0.104		4.04E-08	0.107		8.33E-08	1.417		5.51E-06	0.479		4.96E-06	0.479		3.72E-06
Grader	John Deere 770G/GP	245	0.102		8.80E-08	0.102		2.20E-08	0.105		9.07E-08	1.517		3.26E-06	0.501		8.63E-06	0.501		4.31E-06
Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	0.102	7.38E-04		0.102		3.95E-08	0.105	7.60E-04		1.751		6.80E-06	0.675	6.53E-02		0.675	4.89E-02	
Rock Crusher	McCloskey MCB C50	350	0.054	2.62E-04		0.054		1.40E-08	0.055	2.70E-04		1.730		4.51E-06	0.461	4.48E-02		0.461	2.24E-02	
Rock Cutter	Vermeer T955	415	0.102		8.80E-08	0.102		4.40E-08	0.105		9.07E-08	1.751		7.57E-06	0.675		8.34E-06	0.675		5.84E-06
					8.82E-08															
Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	0.102	6.88E-04		0.102		7.38E-09	0.105	7.10E-04		1.751		1.27E-06	0.675	6.53E-02		0.675	4.57E-02	
Paver	Caterpillar AP-1000D	224	0.100		7.89E-08	0.100		7.89E-09	0.103		8.14E-08	1.646		1.30E-06	0.528		8.32E-06	0.528		4.16E-06
Roller	Caterpillar CB34 XW	46	0.274		4.43E-07	0.274		4.43E-08	0.283		4.57E-07	2.617		4.23E-07	0.909		2.94E-06	0.909		1.47E-06
					6.10E-07			7.47E-08						5.90E-06						
Crane	Terex T750 Truck Crane	500	0.054	1.50E-04		0.054		1.61E-09	0.056	1.55E-04		1.684		5.02E-07	0.430	5.97E-02		0.430	1.19E-02	
Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	0.054	1.79E-04		0.054		1.91E-09	0.055	1.84E-04		1.299		4.64E-07	0.270	1.50E-02		0.270	9.01E-03	
Hydroseeder	Finn Model T120 Hydroseeder	35	0.161		1.01E-07	0.161		2.52E-08	0.166		1.04E-07	1.910		2.99E-07	0.608		6.33E-07	0.608		3.80E-07
					2.97E-07															
Compressor	Sullair 750H	275	0.053	2.01E-04		0.053		1.08E-08	0.054	2.07E-04		1.468		3.01E-06	0.302	2.30E-02		0.302	1.15E-02	
Generator	Caterpillar XQ45	96	0.099	2.11E-04		0.099		1.13E-08	0.102	2.18E-04		2.190		2.50E-06	1.196	3.19E-02		1.196	2.55E-02	
Pump	Honda WT40X	11	0.077	1.18E-04		0.077		1.26E-09	0.084	1.28E-04		1.416		2.32E-08	206.299	6.30E-01		206.299	3.15E-01	
Fuel Tanker	Kenworth T-370, Paccar PX-8	300	0.003			0.003			0.004			0.084			0.064			0.064		
					6.20E-10			2.66E-07						4.41E-05						

West Connection Site – Tunnel Excavation Emissions

West Site - Peak Period 2: TBM Tunneling and Inundation Plug
Nonroad Emissions

Short-Term Peak Period (October 2015)
Annual Peak Period - (August 2015 - July 2016)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours /Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	Pollutant Load after Control (%)
Inundation Plug Construction												
Plug Hole Construction (With BOP)												
Drill Rigs - Pilot HOles	Schramm T130XD	760	Above Ground	3	2	8	16	5	83%	70%	58%	10%
Surface Truck	Tsurumi TE3-100HA	300	Above Ground	9	2	10	20	5				100%
TBM Tunnel Excavation + Lining												
TBM	Not Estimated At This Time		Below Ground	1	3	8	24	5	70%	30%	21%	
Loco	Brookville Tunneling Locomotive	100	Below Ground	3	3	8	24	5	50%	30%	15%	10%
Shaft Crane	LTM 1200-5.1	496	Above Ground	1	3	8	24	5	50%	30%	15%	10%
50T Crane	LTM 1050-3.1	367	Above Ground	1	3	8	24	5	25%	10%	3%	10%
Compressors	Sullair 750H	275	Below Ground	2	3	8	24	5	10%	5%	1%	10%
Generators	Terex T360	426	Below Ground	1	3	8	24	5	10%	5%	1%	10%
Ventilation System	Not Estimated At This Time		Below Ground	1	3	8	24	5	100%	100%	100%	
Loaders	Caterpillar 950H	197	Above Ground	1	3	8	24	5	10%	5%	1%	10%
Pump	Tsurumi TE3-100HA	8	Below Ground	2	3	8	24	5	40%	20%	8%	100%
Grout Batch Plant	Chemgrout CG500/3x8/H	??	Above Ground	1	3	8	24	5	20%	10%	2%	10%
Fork Lift	Caterpillar P20000	148	Above Ground	2	3	8	24	5	10%	5%	1%	10%
Excavator	Liebherr R 934 C Litronic	195	Above Ground	1	3	8	24	5	10%	5%	1%	10%
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	Above Ground	30	3	8	24	5	70%	50%	35%	100%
Concrete Truck	2003 STERLING LT 8513	300	Above Ground	4	3	8	24	5	20%	10%	2%	10%
Fuel Truck	Not Estimated At This Time	300	Above Ground	3	3	8	24	5	5%	2%	0.1%	100%
Potable Water Truck	Not Estimated At This Time	300	Above Ground	3	3	8	24	5	5%	2%	0.1%	100%
ANNUAL ONLY												
(TBM Tunneling) Erect TBM Underground												
Shaft Crane	LTM 1200-5.1	496	Above Ground	1	3	8	24	5	50%	30%	15%	10%
TBM Crane	LTM 1200-5.1	496	Above Ground	1	3	8	24	5	50%	30%	15%	10%
Compressors	Sullair 750H	275	Above Ground	2	3	8	24	5	40%	20%	8%	10%
Welder (Plant)	Not Estimated At This Time		Above Ground	2	3	8	24	5	20%	10%	2%	
Excavator	Liebherr R 934 C Litronic	195	Above Ground	1	3	8	24	5	20%	10%	2%	10%
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	Above Ground	5	3	8	24	5	15%	5%	1%	100%
Fuel Truck	Freightliner FL-80	300	Above Ground	3	3	8	24	5	5%	2%	0%	100%
Potable Water Truck	Freightliner FL-80	300	Above Ground	3	3	8	24	5	5%	2%	0%	100%
Ventilation System	Not Estimated At This Time			1	3	8	24	5	100%	100%	100%	

West Site - Peak Period 2: TBM Tunneling and Inundation Plug
Nonroad Emissions

Short-Term Peak Period (October 2015)
Annual Peak Period - (August 2015 - July 2016)

Equipment	Model	Engine Size (hp)	Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Inundation Plug Construction				9	6											
Plug Hole Construction (With BOP)																
Drill Rigs - Pilot HOles	Schramm T130XD	760	E			P	P	--	317.7	2.74	--	523	39.8	0.152	INDRILL1,2,3	INDRILL1,2,3
Surface Truck	Tsurumi TE3-100HA	300	T	9	6	A	A	2,228.5	2,228.5	2.74	1.3	--	--	--	INSTK1	INSTK1
TBM Tunnel Excavation + Lining				77	39											
TBM	Not Estimated At This Time															
Loco	Brookville Tunneling Locomotive	100	E			A	A	1.0	1.0	2.74	1.3	--	--	--	TBMBELW1	TBMBELW1
Shaft Crane	LTM 1200-5.1	496	E			P	P	--	113.9	3.66	--	523	26.0	0.152	TBMCRA1	TBMCRA1
50T Crane	LTM 1050-3.1	367	E			P	P	--	113.9	3.66	--	523	19.2	0.152	TBM5TC1	TBM5TC1
Compressors	Sullair 750H	275	E			A	A	1.0	1.0	2.74	1.3	--	--	--	TBMBELW1	TBMBELW1
Generators	Terex T360	426	E			A	A	1.0	1.0	2.74	1.3	--	--	--	TBMBELW1	TBMBELW1
Ventilation System	Not Estimated At This Time															
Loaders	Caterpillar 950H	197	E			A	A	2,528.6	2,528.6	2.74	1.3	--	--	--	TBMLOAD1	TBMLOAD1
Pump	Tsurumi TE3-100HA	8	E			A	A	1.0	1.0	2.74	1.3	--	--	--	TBMBELW1	TBMBELW1
Grout Batch Plant	Chemgrout CG500/3x8/H	??														
Fork Lift	Caterpillar P20000	148	E			A	A	62.2	62.2	2.74	1.3	--	--	--	TBMFORK1,2	TBMFORK1,2
Excavator	Liebherr R 934 C Litronic	195	E			A	A	2,528.6	2,528.6	2.74	1.3	--	--	--	TBMEXCA1	TBMEXCA1
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	T	58	30	P	A	--	2,528.6	2.74	--	523	15.7	0.152	TBMSTK1	TBMSTK1
Concrete Truck	2003 STERLING LT 8513	300	CT	8	4	P	A	--	62.2	2.74	--	523	15.7	0.152	TBMCTK1	TBMTKS1
Fuel Truck	Not Estimated At This Time	300	T	6	3	P	A	--	62.2	2.74	--	523	15.7	0.152	TBMFTK1	TBMTKS1
Potable Water Truck	Not Estimated At This Time	300	T	6	3	P	A	--	62.2	2.74	--	523	15.7	0.152	TBMWTK1	TBMTKS1
ANNUAL ONLY																
(TBM Tunneling) Erect TBM Underground					4											
Shaft Crane	LTM 1200-5.1	496	E				P		--	2.74	--	523	26.0	0.152		ERECRA1
TBM Crane	LTM 1200-5.1	496	E				P		--	2.74	--	523	26.0	0.152		ERETBMC1
Compressors	Sullair 750H	275	E				A		62.2	1.83	0.9	--	--	--		ERECOMP1
Welder (Plant)	Not Estimated At This Time															
Excavator	Liebherr R 934 C Litronic	195	E				A		2,528.6	2.74	1.3	--	--	--		EREEXCA1
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	T		2		A		2,528.6	2.74	1.3	--	--	--		ERESTK1
Fuel Truck	Freightliner FL-80	300	T		1		A		62.2	2.74	1.3	--	--	--		ERETKS1
Potable Water Truck	Freightliner FL-80	300	T		1		A		62.2	2.74	1.3	--	--	--		ERETKS1
Ventilation System	Not Estimated At This Time															

West Site - Peak Period 2: TBM Tunneling and Inundation Plug																				
Nonroad Emissions																				
Short-Term Peak Period (October 2015)																				
Annual Peak Period - (August 2015 - July 2016)												*No DPF Control Factor			*No Daily Usage %/No Control Factor			*No DPF Control Factor		
Equipment	Model	Engine Size (hp)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s)	$PM_{2.5}$ 24-Hr Emission per Eqp ($g/s/m^2$)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ Annual Emission per Eqp (g/s)	$PM_{2.5}$ Annual Emission per Eqp ($g/s/m^2$)	PM_{10} EF (g/hp-hr)	PM_{10} 24-Hr Emission per Eqp (g/s)	PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)	NOx EF (g/hp-hr)	NOx Annual Emission per Eqp (g/s)	NOx Annual Emission per Eqp (g/s/m2)	CO EF (g/hp-hr)	CO 1-Hr Emission per Eqp (g/s)	CO 1-Hr Emission per Eqp ($g/s/m^2$)	CO EF (g/hp-hr)	CO 8-Hr Emission per Eqp (g/s)	CO 8-Hr Emission per Eqp ($g/s/m^2$)
Inundation Plug Construction																				
Plug Hole Construction (With BOP)																				
Drill Rigs - Pilot HOles	Schramm T130XD	760	0.051	8.99E-04		0.051	6.29E-04		0.053	9.27E-04		2.728	3.35E-01		0.783	1.65E-01		0.783	1.37E-01	
Surface Truck	Tsurumi TE3-100HA	300	0.003		4.67E-09	0.003		3.12E-09	0.004		5.08E-09	0.084		7.89E-08	0.064		8.93E-08	0.064		8.93E-08
TBM Tunnel Excavation + Lining																				
TBM	Not Estimated At This Time																			
Loco	Brookville Tunneling Locomotive	100	0.172		7.17E-04	0.172		2.15E-04	0.177		7.39E-04	2.390		2.99E-02	2.016		1.68E-01	2.016		8.40E-02
Shaft Crane	LTM 1200-5.1	496	0.054	3.72E-04		0.054	1.12E-04		0.056	3.84E-04		1.684	3.48E-02		0.430	5.92E-02		0.430	2.96E-02	
50T Crane	LTM 1050-3.1	367	0.054	1.38E-04		0.054	1.38E-05		0.056	1.42E-04		1.684	4.29E-03		0.430	4.38E-02		0.430	1.10E-02	
Compressors	Sullair 750H	275	0.053		8.03E-05	0.053		4.01E-06	0.054		8.28E-05	1.468		1.12E-03	0.302		4.61E-02	0.302		4.61E-03
Generators	Terex T360	426	0.051		5.98E-05	0.051		2.99E-06	0.052		6.17E-05	2.065		1.22E-03	0.648		7.67E-02	0.648		7.67E-03
Ventilation System	Not Estimated At This Time																			
Loaders	Caterpillar 950H	197	0.057		1.23E-08	0.057		6.15E-10	0.059		1.27E-08	1.051		1.14E-07	0.560		1.21E-05	0.560		1.21E-06
Pump	Tsurumi TE3-100HA	8	0.077		1.37E-04	0.077		2.74E-05	0.084		1.49E-04	1.416		5.03E-04	206.299		9.17E-01	206.299		3.67E-01
					9.94E-04			2.49E-04			1.03E-03			3.27E-02			1.21E+00			4.63E-01
Grout Batch Plant	Chemgrout CG500/3x8/H	??																		
Fork Lift	Caterpillar P20000	148	0.151		1.24E-04	0.151		6.20E-06	0.155		1.28E-04	1.311		5.39E-04	0.562		4.62E-02	0.562		4.62E-03
					5.85E-08			2.92E-09			6.03E-08			2.54E-07			2.18E-05			2.18E-06
					6.03E-08			3.01E-09			6.21E-08			2.62E-07			2.25E-05			2.25E-06
Excavator	Liebherr R 934 C Litronic	195	0.104		2.23E-08	0.104		1.11E-09	0.107		2.30E-08	1.417		1.52E-07	0.479		1.03E-05	0.479		1.03E-06
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	0.003	5.59E-05		0.003		1.14E-08	0.004	6.08E-05		0.084		2.90E-07	0.064	1.07E-03		0.064	1.07E-03	
Concrete Truck	2003 STERLING LT 8513	300	0.003	6.94E-06		0.003		5.58E-08	0.004	7.55E-06		0.084		1.41E-05	0.064	1.33E-03		0.064	1.33E-03	
Fuel Truck	Not Estimated At This Time	300	0.003	5.79E-06		0.003		4.65E-08	0.004	6.29E-06		0.084		1.18E-06	0.064	1.11E-04		0.064	1.11E-04	
Potable Water Truck	Not Estimated At This Time	300	0.003	5.79E-06		0.003		4.65E-08	0.004	6.29E-06		0.084		1.18E-06	0.064	1.11E-04		0.064	1.11E-04	
								1.49E-07						1.65E-05						
ANNUAL ONLY																				
(TBM Tunneling) Erect TBM Underground																				
Shaft Crane	LTM 1200-5.1	496	0.054			0.054	1.12E-04		0.056			1.684	3.48E-02		0.430			0.430		
TBM Crane	LTM 1200-5.1	496	0.054			0.054	1.12E-04		0.056			1.684	3.48E-02		0.430			0.430		
Compressors	Sullair 750H	275	0.053			0.053		1.03E-06	0.054			1.468		2.88E-04	0.302			0.302		
Welder (Plant)	Not Estimated At This Time																			
Excavator	Liebherr R 934 C Litronic	195	0.104			0.104		4.46E-09	0.107			1.417		6.07E-07	0.479			0.479		
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	0.003			0.003		7.63E-10	0.004			0.084		1.93E-08	0.064			0.064		
Fuel Truck	Freightliner FL-80	300	0.003			0.003		1.55E-08	0.004			0.084		3.93E-07	0.064			0.064		
Potable Water Truck	Freightliner FL-80	300	0.003			0.003		1.55E-08	0.004			0.084		3.93E-07	0.064			0.064		
								3.10E-08						7.86E-07						
Ventilation System	Not Estimated At This Time																			

East Connection Site – Site Preparation Emissions

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construction

Nonroad Emissions

Short-Term Peak Period - (September 2013)

Annual Peak Period - (March 2013-February 2014)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours/ Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	BAT: Pollutant Load after Control (%)
Site Preparation East Shaft Stage 4 - Final Grading/Roadway												
Grader	John Deere 770G/GP	245	Above Ground	1	1	8	8	5	80%	50%	40%	10%
Paver	Caterpillar AP-1000D	224	Above Ground	1	1	8	8	5	75%	75%	56%	10%
Roller	Caterpillar CB34 XW	46	Above Ground	1	1	8	8	5	75%	75%	56%	100%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	2	1	8	8	5	75%	75%	56%	100%
Asphalt Flow Boy	Flow Boy 3064	425	Above Ground	1	1	8	8	5	75%	75%	56%	100%
12 Yard Concrete Mixer	Peterbilt 365	455	Above Ground	1	1	8	8	5	50%	50%	25%	10%
Water Tanker	Peterbilt 340	330	Above Ground	1	1	8	8	5	75%	75%	56%	100%
Hydroseeder	FINN Model T120 Hydroseeder	35	Above Ground	1	1	8	8	5	20%	10%	2%	100%
Stage 2 - Excavation and Lining of Shaft in Soil (mid-August to September)												
Shaft Crane	LTM 1200-5.1	496	Above Ground	-	2	8	16	5	80%	20%	16%	10%
Compressors	Sullair 750H	275	Above Ground	1	2	8	16	5	20%	10%	2%	10%
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	Above Ground	9	2	8	16	5	50%	50%	25%	100%
Concrete Truck	2003 STERLING LT8513	300	Above Ground		2	8	16	5				10%
Other Trucks		300	Above Ground		2	8	16	5				100%
Fuel Truck	Freightliner FL-80	300	Above Ground	3	2	8	16	5	50%	25%	13%	100%
Potable Water Truck	Freightliner FL-80	300	Above Ground	3	2	8	16	5	25%	10%	3%	100%
Generators	Terex T360	426	Above Ground		2	8	16	5				10%
Loaders	Caterpillar 950H	197	Above Ground	1	2	8	16	5	87%	87%	76%	10%
Concrete Pumps	Putzmeister TK 60 HP	131	Above Ground	-	2	8	16	5				10%
Excavator	Liebherr R 934 C Litronic	195	Below Ground	1	2	8	16	5	87%	87%	76%	10%
Pump	Tsurumi TE3-100HA	8	Above Ground	3	2	8	16	5	20%	10%	2%	100%
Fork Lift	Caterpillar P20000	148	Above Ground		2	8	16	5				10%
support, shaft lining in rock												
Shaft Crane	LTM 1200-5.1	496	Above Ground	1	2	8	16	5	50%	50%	25%	10%
Shotcrete Pump	Putzmeister TK 60 HP	131	Above Ground	1	2	8	16	5	10%	5%	1%	10%
Ventilation System	Not Estimated At This Time		Above Ground	1	2	8	16	5	100%	100%	100%	
Compressors	Sullair 750H	275	Above Ground	2	2	8	16	5	20%	5%	1%	10%

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construc																		
Nonroad Emissions																PM2.5 Sample Calculation (EQUIPMENT)		
Short-Term Peak Period - (September 2013)																PM2.5 Sample Calculation (TRUCKS)		
Annual Peak Period - (March 2013-February 2014)																PM2.5 Sample Calculation (CONCRETE TRUCKS)		
Equipment	Model	Engine Size (hp)		Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID	
Site Preparation East Shaft Stage 4 - Final Grading/Roadway					5	4												
Grader	John Deere 770G/GP	245		E			A	A	774.1	774.1	2.74	1.3	--	--	--	SPEQP1	SP4EQP1	
Paver	Caterpillar AP-1000D	224		E			A	A	774.1	774.1	2.74	1.3	--	--	--	SPEQP1	SP4EQP1	
Roller	Caterpillar CB34 XW	46		E			A	A	774.1	774.1	2.74	1.3	--	--	--	SPEQP1	SP4EQP1	
20 Yard Dump Truck	Kenworth T800	525		T	2	1	A	A	774.1	774.1	2.74	1.3	--	--	--	SPEQP1	SP4EQP1	
Asphalt Flow Boy	Flow Boy 3064	425		T	1	1	A	A	774.1	774.1	2.74	1.3	--	--	--	SPEQP1	SP4EQP1	
12 Yard Concrete Mixer	Peterbilt 365	455		CT	1	1	P	A	--	75.1	2.74	--	523	23.9	0.152	SPCMIX1	SP4TKS1	
Water Tanker	Peterbilt 340	330		T	1	1	P	A	--	75.1	2.74	--	523	17.3	0.152	SPWTK1	SP4TKS1	
Hydroseeder	FINN Model T120 Hydroseeder	35		E			A	A	774.1	774.1	2.74	1.3	--	--	--	SPEQP1	SP4EQP1	
Stage 2 - Excavation and Lining of Shaft in Soil (mid-August to September)					20	12												
Shaft Crane	LTM 1200-5.1	496																
Compressors	Sullair 750H	275		E			P	P	--	--	1.83	--	523	14.4	0.152	SSCOMP1	SSCOMP1	
Surface Truck	Mack Truck CV712, AMI-300 ASET	300		T	9	5	P	A	--	67.9	2.74	--	523	15.7	0.152	SSSTK1	SSSTK1	
Concrete Truck	2003 STERLING LT8513	300																
Other Trucks		300		T	5	5	P	A	--	149.7	2.74	--	523	15.7	0.152	SSFTK1	SSTKS1	
Fuel Truck	Freightliner FL-80	300		T	3	1	P	A	--	149.7	2.74	--	523	15.7	0.152	SSFTK1	SSTKS1	
Potable Water Truck	Freightliner FL-80	300		T	3	1	P	A	--	149.7	2.74	--	523	15.7	0.152	SSWTK1	SSTKS1	
Generators	Terex T360	426																
Loaders	Caterpillar 950H	197		E			A	A	462.1	462.1	2.74	1.3	--	--	--	SSLOAD1	SSLOAD1	
Concrete Pumps	Putzmeister TK 60 HP	131																
Excavator	Liebherr R 934 C Litronic	195		E			A	A	402.5	402.5	2.74	1.3	--	--	--	SSEXCA1	SSEXCA1	
Pump	Tsurumi TE3-100HA	8		E			P	A	--	685.9	1.83	--	523	0.4	0.152	SSPUMP1,2,3	SSPUMP1	
Fork Lift	Caterpillar P20000	148																
support, shaft lining in rock					20	12												
Shaft Crane	LTM 1200-5.1	496		E			P	P	--	--	3.66	--	523	26.0	0.152	SRCRAN1	SRCRAN1	
Shotcrete Pump	Putzmeister TK 60 HP	131		E			P	A	--	175.7	2.74	--	523	6.9	0.152	SRSPMP1	SRCONC1	
Ventilation System	Not Estimated At This Time																	
Compressors	Sullair 750H	275		E			P	P	--	--	1.83	--	523	14.4	0.152	SRCOMP1,2	SRCOMP1,2	

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construc																				
Nonroad Emissions			PM2.5 24-Hr Emission (g/s) = PM2.5 EF (g/hp-hr) * Engine Horsepower (hp) * Daily Usage Percent * BAT Control Factor * (1hr/3600s); For Row 35-Compressors = 0.053 g/hp-hr * 275 hp * 0.2* 0.15 / 3600 = 1.20E-4 g/s;																	
			for Row 7-Grader (in Area Source) = 0.102 g/hp-hr * 245 hp * 0.8 * 0.15 / 3600 / Source Area (774.1 m2) = 1.08E-6 g/s																	
Short-Term Peak Period - (September 2013)			PM2.5 24-Hr Emission (g/s) = Emission Factor (g/hp-hr) * Horsepower (hp) * Trucks per hour * Idling Time * (1hr/3600s); For Row 25 - Water Tanker = 0.003 g/hp-hr * 330 hp * (1/8) * (5min / 60min) / 3600 = 2.89X10-6 g/																	
Annual Peak Period - (March 2013-February 2014)			PM2.5 24-Hr Emission (g/s) = Emission Factor (g/hp-hr) * Horsepower (hp) * Trucks per hour * Idling Time * Control Factor * (1hr/3600s); For Row 22 - Concrete Truck = 0.0022 g/hp-hr * 455 hp * (1/8) * (45min / 60min) * 0.15 / 3600 =3.91X10-6 g/																	
Equipment	**Model**	**Engine Size (hp)**	**$PM_{2.5}$ EF (g/hp-hr)**	**(Point Source) $PM_{2.5}$ 24-Hr Emission per Eqp (g/s)**	**(Area Source) $PM_{2.5}$ 24-Hr Emission ($g/s/m^2$)**	**$PM_{2.5}$ EF (g/hp-hr)**	**(Point Source) $PM_{2.5}$ Annual Emission per Eqp (g/s)**	**(Area Source) PM2.5 Annual Emission per Eqp (g/s/m2)**	**PM_{10} EF (g/hp-hr)**	**(Point Source) PM_{10} 24-hr Emission per Eqp (g/s)**	**(Area Source) PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)**	**NOx EF (g/hp-hr)**	**(Point Source) NOx Annual Emission per Eqp (g/s)**	**(Area Source) NOx Annual Emission per Eqp (g/s/m2)**	**CO EF (g/hp-hr)**	**(Point Source) CO 1-Hr Emission per Eqp (g/s)**	**(Area Source) CO 1-Hr Emission per Eqp ($g/s/m^2$)**	**CO EF (g/hp-hr)**	**(Point Source) CO 8-Hr Emission per Eqp (g/s)**	**(Area Source) CO 8-Hr Emission per Eqp ($g/s/m^2$)**
Site Preparation East Shaft Stage 4 - Final Grading/Roadway																				
Grader	John Deere 770G/GP	245	0.102		7.19E-07	0.102		3.60E-07	0.105		7.41E-07	1.517		5.34E-05	0.501		4.41E-05	0.501		3.53E-05
Paver	Caterpillar AP-1000D	224	0.100		6.05E-07	0.100		4.54E-07	0.103		6.24E-07	1.646		7.44E-05	0.528		4.25E-05	0.528		3.19E-05
Roller	Caterpillar CB34 XW	46	0.274		3.39E-06	0.274		2.54E-06	0.283		3.50E-06	2.617		2.43E-05	0.909		1.50E-05	0.909		1.13E-05
20 Yard Dump Truck	Kenworth T800	525	0.002		7.48E-09	0.002		3.74E-09	0.002		8.13E-09	0.048		7.33E-05	0.036		1.43E-07	0.036		1.43E-07
Asphalt Flow Boy	Flow Boy 3064	425	0.002		3.74E-09	0.002		3.74E-09	0.003		4.06E-09	0.060		7.33E-05	0.045		7.14E-08	0.045		7.14E-08
12 Yard Concrete Mixer	Peterbilt 365	455	0.002	2.60E-06		0.002		3.47E-08	0.002	2.83E-06		0.056		6.60E-04	0.042	4.97E-04		0.042	4.97E-04	
Water Tanker	Peterbilt 340	330	0.003	2.89E-06		0.003		3.85E-08	0.003	3.14E-06		0.077		7.33E-05	0.058	5.53E-05		0.058	5.53E-05	
								7.32E-08						7.33E-04						
Hydroseeder	FINN Model T120 Hydroseeder	35	0.161		4.05E-07	0.161		4.05E-08	0.166		4.18E-07	1.910		4.80E-07	0.608		7.63E-06	0.608		1.53E-06
					5.13E-06			3.41E-06			5.29E-06			2.99E-04			1.09E-04			8.01E-05
Stage 2 - Excavation and Lining of Shaft in Soil (mid-August to September)																				
Shaft Crane	LTM 1200-5.1	496	0.054			0.054			0.056			1.684			0.430			0.430		
Compressors	Sullair 750H	275	0.053	8.03E-05		0.053	8.03E-06		0.054	8.28E-05		1.468	2.24E-03		0.302	2.30E-02		0.302	4.61E-03	
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	0.003	1.30E-05		0.003		1.07E-07	0.004	1.42E-05		0.084		1.83E-04	0.064	2.49E-04		0.064	2.49E-04	
Concrete Truck	2003 STERLING LT8513	300	0.003			0.003			0.004			0.084			0.064			0.064		
Other Trucks		300	0.003	7.23E-06		0.003		4.83E-08	0.004	7.86E-06		0.084		1.83E-04	0.064	1.38E-04		0.064	1.38E-04	
Fuel Truck	Freightliner FL-80	300	0.003	4.34E-06		0.003		9.66E-09	0.004	4.72E-06		0.084		3.67E-05	0.064	8.29E-05		0.064	8.29E-05	
				1.16E-05						1.26E-05						2.21E-04			2.21E-04	
Potable Water Truck	Freightliner FL-80	300	0.003	4.34E-06		0.003		9.66E-09	0.004	4.72E-06		0.084		3.67E-05	0.064	8.29E-05		0.064	8.29E-05	
								6.76E-08						2.57E-04						
Generators	Terex T360	426	0.051			0.051			0.052			2.065			0.648			0.648		
Loaders	Caterpillar 950H	197	0.057		5.85E-07	0.057		5.09E-07	0.059		6.03E-07	1.051		9.42E-05	0.560		6.64E-05	0.560		5.77E-05
Concrete Pumps	Putzmeister TK 60 HP	131	0.080			0.080			0.080			2.132			0.798			0.798		
Excavator	Liebherr R 934 C Litronic	195	0.104		1.22E-06	0.104		1.06E-06	0.107		1.26E-06	1.417		1.44E-04	0.479		6.44E-05	0.479		5.61E-05
Pump	Tsurumi TE3-100HA	8	0.077	3.42E-05		0.077		1.50E-08	0.084	3.72E-05		1.416		2.75E-07	206.299	4.58E-01		206.299	9.17E-02	
Fork Lift	Caterpillar P20000	148	0.151			0.151			0.155			1.311			0.562			0.562		
support, shaft lining in rock																				
Shaft Crane	LTM 1200-5.1	496	0.054	3.72E-04		0.054	1.86E-04		0.056	3.84E-04		1.684	5.80E-02		0.430	5.92E-02		0.430	2.96E-02	
Shotcrete Pump	Putzmeister TK 60 HP	131	0.080	2.90E-05		0.080		8.25E-09	0.080	2.90E-05		2.132		2.21E-06	0.798	2.91E-02		0.798	2.91E-03	
Ventilation System	Not Estimated At This Time																			
Compressors	Sullair 750H	275	0.053	8.03E-05		0.053	4.01E-06		0.054	8.28E-05		1.468	1.12E-03		0.302	2.30E-02		0.302	4.61E-03	

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construction
Nonroad Emissions

Short-Term Peak Period - (September 2013)
Annual Peak Period - (March 2013-February 2014)

Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours/ Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	BAT: Pollutant Load after Control (%)
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	Above Ground	13	2	8	16	5	30%	30%	9%	100%
Concrete Truck	2003 STERLING LT8513	300	Above Ground	1	2	8	16	5	87%	40%	35%	10%
Fuel Truck	Freightliner FL-80	300	Above Ground	3	2	8	16	5	15%	7%	1%	100%
Potable Water Truck	Freightliner FL-80	300	Above Ground	3	2	8	16	5	1%	1%	0%	100%
Loaders	Caterpillar 950H	197	Above Ground	1	2	8	16	5	30%	30%	9%	10%
Concrete Pumps	Putzmeister TK 60 HP	131	Above Ground	1	2	8	16	5	87%	40%	35%	10%
Pump	Tsurumi TE3-100HA	8	Above Ground	3	2	8	16	5	10%	5%	1%	100%
150000 lb Winch	Ingersoll Rand HA3-075M	25	Above Ground	-	2	8	16	5				100%
Hydraulic Winches	Ingersoll Rand LC2H500Q	??	Above Ground	4	2	8	16	5	10%	5%	1%	10%
100000 lbs Winch	Ingersoll Rand HA2-050M	9.4	Above Ground	-	2	8	16	5				100%
PB Winch	Timberland E780 General Purpose Winch	??	Above Ground	4	2	8	16	5	10%	5%	1%	10%
Drill Jumbos	Sandvik DD530	228	Above Ground	2	2	8	16	5	30%	30%	9%	10%
Fork Lift	Caterpillar P20000	148	Above Ground	1	2	8	16	5	30%	15%	5%	10%
Excavator	Liebherr R 934 C Litronic	195	Above Ground	1	2	8	16	5	10%	10%	1%	10%
Stage 1 - Secant Piles (July to mid-August												
Compressors	Sullair 750H	275	Above Ground	1	2	8	16	5	20%	10%	2%	10%
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	Above Ground	9	2	8	16	5	50%	50%	25%	100%
Piling Rig	BG 12H Rotary Drilling Rig. Base Carrie	205	Above Ground	1	2	8	16	5	87%	43%	37%	10%
Concrete Truck	2003 STERLING LT8513	300	Above Ground	2	2	8	16	5	50%	25%	13%	10%
Other Trucks		300	Above Ground	2	2	8	16	5	50%	25%	13%	15%
Fuel Truck	Freightliner FL-80	300	Above Ground	3	2	8	16	5	50%	25%	13%	100%
Loaders	Caterpillar 950H	197	Above Ground	1	2	8	16	5	60%	60%	36%	10%
Pump	Tsurumi TE3-100HA	8	Above Ground	-	2	8	16	5				100%
Site Preparation East Shaft Stage 2 - Install Fence/Excavate Sediment Basin/manholes												
Pickup Truck	Ford F-150	365	Above Ground	2	1	8	8	5	20%	100%	20%	100%
Excavator	John Deere 450D LC	348	Above Ground	2	1	8	8	5	50%	75%	38%	10%
Standard Backhoe	Caterpillar 450E	124	Above Ground	2	1	8	8	5	80%	80%	64%	10%

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construc

Nonroad Emissions

Short-Term Peak Period - (September 2013)

Annual Peak Period - (March 2013-February 2014)

PM2.5 Sample Calculation (EQUIPMENT)

PM2.5 Sample Calculation (TRUCKS)

PM2.5 Sample Calculation (CONCRETE TRUCKS)

Equipment	Model	Engine Size (hp)	Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	T	13	9	P	A	--	67.9	2.74	--	523	15.7	0.152	SRSTK1	SRCONC1
Concrete Truck	2003 STERLING LT8513	300	CT	1	1	P	A	--	175.7	2.74	--	523	15.7	0.152	SRCTK1	SRCONC1
Fuel Truck	Freightliner FL-80	300	T	3	1	P	A	--	149.7	2.74	--	523	15.7	0.152	SRFTK1	SRTKS1
Potable Water Truck	Freightliner FL-80	300	T	3	1	P	A	--	149.7	2.74	--	523	15.7	0.152	SRWTK1	SRTKS1
Loaders	Caterpillar 950H	197	E			A	A	462.1	462.1	2.74	1.3	--	--	--	SRLOAD1	SRLOAD1
Concrete Pumps	Putzmeister TK 60 HP	131	E			P	A	--	175.7	2.74	--	523	6.9	0.152	SRCPMP1	SRCONC1
Pump	Tsurumi TE3-100HA	8	E			P	A	--	685.9	1.83	--	523	0.4	0.152	SRPUMP1,2,3	SRPUMP1
150000 lb Winch	Ingersoll Rand HA3-075M	25														
Hydraulic Winches	Ingersoll Rand LC2H500Q	??														
100000 lbs Winch	Ingersoll Rand HA2-050M	9.4														
PB Winch	Timberland E780 General Purpose Winch	??														
Drill Jumbos	Sandvik DD530	228	E			A	A	402.5	402.5	2.74	1.3	--	--	--	SRDJUM1	SRDJUM1
Fork Lift	Caterpillar P20000	148	E			A	A	462.1	462.1	1.83	0.9	--	--	--	SRFORK1	SRFORK1
Excavator	Liebherr R 934 C Litronic	195	E			A	A	402.5	402.5	2.74	1.3	--	--	--	SREXCA1	SREXCA1
Stage 1 - Secant Piles (July to mid-August					12											
Compressors	Sullair 750H	275	E				A		402.5	2.74	1.3	--	--	--		SECEQP1
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	T		5		A		402.5	2.74	1.3	--	--	--		SECEQP1
Piling Rig	BG 12H Rotary Drilling Rig. Base Carrie	205	E				A		402.5	2.74	1.3	--	--	--		SECEQP1
Concrete Truck	2003 STERLING LT8513	300	CT		1		A		402.5	2.74	1.3	--	--	--		SECEQP1
Other Trucks		300	T		5		A		402.5	2.74	1.3	--	--	--		SECEQP1
Fuel Truck	Freightliner FL-80	300	T		1		A		402.5	2.74	1.3	--	--	--		SECEQP1
Loaders	Caterpillar 950H	197	E				A		402.5	2.74	1.3	--	--	--		SECEQP1
Pump	Tsurumi TE3-100HA	8														
Site Preparation East Shaft Stage 2 - Install Fence/Excavate Sediment Basi					4											
Pickup Truck	Ford F-150	365	T		2		A		1,362.9	2.74	1.3	--	--	--		SP2EQP1
Excavator	John Deere 450D LC	348	E				A		1,362.9	2.74	1.3	--	--	--		SP2EQP1
Standard Backhoe	Caterpillar 450E	124	E				A		1,362.9	2.74	1.3	--	--	--		SP2EQP1

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construc																				
Nonroad Emissions			PM2.5 24-Hr Emission (g/s) = PM2.5 EF (g/hp-hr) * Engine Horsepower (hp) * Daily Usage Percent * BAT Control Factor * (1hr/3600s); For Row 35-Compressors = 0.053 g/hp-hr * 275 hp * 0.2* 0.15 / 3600 = 1.20E-4 g/s;																	
			for Row 7-Grader (in Area Source) = 0.102 g/hp-hr * 245 hp * 0.8 * 0.15 / 3600 / Source Area (774.1 m2) = 1.08E-6 g/s																	
Short-Term Peak Period - (September 2013)			PM2.5 24-Hr Emission (g/s) = Emission Factor (g/hp-hr) * Horsepower (hp) * Trucks per hour * Idling Time * (1hr/3600s); For Row 25 - Water Tanker = 0.003 g/hp-hr * 330 hp * (1/8) * (5min / 60min) / 3600 = 2.89X10-6 g/																	
Annual Peak Period - (March 2013-February 2014)			PM2.5 24-Hr Emission (g/s) = Emission Factor (g/hp-hr) * Horsepower (hp) * Trucks per hour * Idling Time * Control Factor * (1hr/3600s); For Row 22 - Concrete Truck = 0.0022 g/hp-hr * 455 hp * (1/8) * (45min / 60min) * 0.15 / 3600 =3.91X10-6 g/																	
Equipment	**Model**	**Engine Size (hp)**	**$PM_{2.5}$ EF (g/hp-hr)**	**(Point Source) $PM_{2.5}$ 24-Hr Emission per Eqp (g/s)**	**(Area Source) $PM_{2.5}$ 24-Hr Emission ($g/s/m^2$)**	**$PM_{2.5}$ EF (g/hp-hr)**	**(Point Source) $PM_{2.5}$ Annual Emission per Eqp (g/s)**	**(Area Source) PM2.5 Annual Emission per Eqp (g/s/m2)**	**PM_{10} EF (g/hp-hr)**	**(Point Source) PM_{10} 24-hr Emission per Eqp (g/s)**	**(Area Source) PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)**	**NOx EF (g/hp-hr)**	**(Point Source) NOx Annual Emission per Eqp (g/s)**	**(Area Source) NOx Annual Emission per Eqp (g/s/m2)**	**CO EF (g/hp-hr)**	**(Point Source) CO 1-Hr Emission per Eqp (g/s)**	**(Area Source) CO 1-Hr Emission per Eqp ($g/s/m^2$)**	**CO EF (g/hp-hr)**	**(Point Source) CO 8-Hr Emission per Eqp (g/s)**	**(Area Source) CO 8-Hr Emission per Eqp ($g/s/m^2$)**
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	0.003	1.88E-05		0.003		1.92E-07	0.004	2.04E-05		0.084		3.30E-04	0.064	3.59E-04		0.064	3.59E-04	
Concrete Truck	2003 STERLING LT8513	300	0.003	1.30E-06		0.003		7.41E-09	0.004	1.42E-06		0.084		3.30E-04	0.064	2.49E-04		0.064	2.49E-04	
Fuel Truck	Freightliner FL-80	300	0.003	4.34E-06		0.003		9.66E-09	0.004	4.72E-06		0.084		3.67E-05	0.064	8.29E-05		0.064	8.29E-05	
Potable Water Truck	Freightliner FL-80	300	0.003	4.34E-06		0.003		9.66E-09	0.004	4.72E-06		0.084		3.67E-05	0.064	8.29E-05		0.064	8.29E-05	
								1.93E-08						7.33E-05						
Loaders	Caterpillar 950H	197	0.057		2.02E-07	0.057		6.05E-08	0.059		2.08E-07	1.051		1.12E-05	0.560		6.64E-05	0.560		1.99E-05
Concrete Pumps	Putzmeister TK 60 HP	131	0.080	2.52E-04		0.080		5.74E-07	0.080	2.52E-04		2.132		1.54E-04	0.798	2.91E-02		0.798	2.53E-02	
								7.82E-07						8.16E-04						
Pump	Tsurumi TE3-100HA	8	0.077	1.71E-05		0.077		3.74E-09	0.084	1.86E-05		1.416		6.88E-08	206.299	4.58E-01		206.299	4.58E-02	
150000 lb Winch	Ingersoll Rand HA3-075M	25																		
Hydraulic Winches	Ingersoll Rand LC2H500Q	??																		
100000 lbs Winch	Ingersoll Rand HA2-050M	9.4																		
PB Winch	Timberland E780 General Purpose Winch	??																		
Drill Jumbos	Sandvik DD530	228	0.051		4.78E-07	0.051		1.43E-07	0.052		4.93E-07	2.130		6.03E-05	0.585		1.84E-04	0.585		5.52E-05
Fork Lift	Caterpillar P20000	148	0.151		4.03E-07	0.151		6.04E-08	0.155		4.15E-07	1.311		5.25E-06	0.562		5.00E-05	0.562		1.50E-05
Excavator	Liebherr R 934 C Litronic	195	0.104		1.40E-07	0.104		1.40E-08	0.107		1.44E-07	1.417		1.91E-06	0.479		6.44E-05	0.479		6.44E-06
Stage 1 - Secant Piles (July to mid-August																				
Compressors	Sullair 750H	275	0.053			0.053		1.99E-08	0.054			1.468		5.57E-06	0.302			0.302		
Surface Truck	Mack Truck CV712, AMI-300 ASET	300	0.003			0.003		1.80E-08	0.004			0.084		1.83E-04	0.064			0.064		
Piling Rig	BG 12H Rotary Drilling Rig. Base Carrie	205	0.054			0.054		2.83E-07	0.055			1.299		6.87E-05	0.270			0.270		
Concrete Truck	2003 STERLING LT8513	300	0.003			0.003		3.23E-09	0.004			0.084		3.30E-04	0.064			0.064		
Other Trucks		300	0.003			0.003		2.70E-09	0.004			0.084		1.83E-04	0.064			0.064		
Fuel Truck	Freightliner FL-80	300	0.003			0.003		3.59E-09	0.004			0.084		3.67E-05	0.064			0.064		
Loaders	Caterpillar 950H	197	0.057			0.057		2.78E-07	0.059			1.051		5.15E-05	0.560			0.560		
								6.09E-07						8.59E-04						
Pump	Tsurumi TE3-100HA	8	0.077			0.077			0.084			1.416			206.299			206.299		
Site Preparation East Shaft Stage 2 - Install Fence/Excavate Sediment Basi																				
Pickup Truck	Ford F-150	365	0.003			0.003		4.25E-09	0.003			0.069		1.47E-04	0.052			0.052		
Excavator	John Deere 450D LC	348	0.104			0.104		5.53E-07	0.107			1.417		7.54E-05	0.479			0.479		
Standard Backhoe	Caterpillar 450E	124	0.075			0.075		2.44E-07	0.078			1.117		3.61E-05	0.672			0.672		

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construction												
Nonroad Emissions												
Short-Term Peak Period - (September 2013)												
Annual Peak Period - (March 2013-February 2014)												
Equipment	**Model**	**Engine Size (hp)**	**Location**	**Quantity**	**Shifts / Day**	**Hours / Shift**	**Hours/ Day**	**Days / Week**	**Daily Usage %**	**Usage % Over Task**	**Annual Usage %**	**BAT: Pollutant Load after Control (%)**
Front End Loader	Caterpillar 950H	197	Above Ground	2	1	8	8	5	100%	50%	50%	10%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	2	1	8	8	5	100%	50%	50%	100%
Bulldozer	Caterpillar D8T	310	Above Ground	1	1	8	8	5	100%	75%	75%	10%
Water Tanker	Peterbilt 340	330	Above Ground	1	1	8	8	5	25%	25%	6%	100%
Hydroseeder	FINN Model T120 Hydroseeder	35	Above Ground	1	1	8	8	5	10%	10%	1%	100%
Site Preparation East Shaft Stage 3- Grubbing/Stripping/Rough Grading												
Pickup Truck	Ford F-150	365	Above Ground	2	1	8	8	5	20%	100%	20%	100%
Excavator	John Deere 450D LC	348	Above Ground	1	1	8	8	5	100%	75%	75%	10%
Standard Backhoe	Caterpillar 450E	124	Above Ground	1	1	8	8	5	100%	80%	80%	10%
Front End Loader	Caterpillar 950H	197	Above Ground	1	1	8	8	5	100%	80%	80%	10%
20 Yard Dump Truck	Kenworth T800	525	Above Ground	2	1	8	8	5	100%	75%	75%	100%
Bulldozer	Caterpillar D8T	310	Above Ground	1	1	8	8	5	100%	75%	75%	10%
Water Tanker	Peterbilt 340	330	Above Ground	1	1	8	8	5	100%	75%	75%	100%
Hydroseeder	FINN Model T120 Hydroseeder	35	Above Ground	1	1	8	8	5	20%	10%	2%	100%
Site Preparation East Shaft Stage 5 - Installation of Offices												
Pickup Truck	Ford F-150	365	Above Ground	1	1	8	8	5	20%	100%	20%	10%
Trailer Truck		455	Above Ground	1	1	8	8	5	50%	50%	25%	100%
Standard Backhoe	Caterpillar 450E	124	Above Ground	1	1	8	8	5	75%	50%	38%	10%

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construc																		
Nonroad Emissions																	PM2.5 Sample Calculation (EQUIPMENT)	
Short-Term Peak Period - (September 2013)																	PM2.5 Sample Calculation (TRUCKS)	
Annual Peak Period - (March 2013-February 2014)																	PM2.5 Sample Calculation (CONCRETE TRUCKS)	
Equipment	Model	Engine Size (hp)		Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID	
Front End Loader	Caterpillar 950H	197		E				A		1,362.9	2.74	1.3	--	--	--		SP2EQP1	
20 Yard Dump Truck	Kenworth T800	525		T		1		A		1,362.9	2.74	1.3	--	--	--		SP2EQP1	
Bulldozer	Caterpillar D8T	310		E				A		1,362.9	2.74	1.3	--	--	--		SP2EQP1	
Water Tanker	Peterbilt 340	330		T		1		A		1,362.9	2.74	1.3	--	--	--		SP2EQP1	
Hydroseeder	FINN Model T120 Hydroseeder	35		E				A		1,362.9	2.74	1.3	--	--	--		SP2EQP1	
Site Preparation East Shaft Stage 3- Grubbing/Stripping/Rough Grading						5												
Pickup Truck	Ford F-150	365		T		2		A		3,732.0	2.74	1.3	--	--	--		SP3EQP1	
Excavator	John Deere 450D LC	348		E				A		3,732.0	2.74	1.3	--	--	--		SP3EQP1	
Standard Backhoe	Caterpillar 450E	124		E				A		3,732.0	2.74	1.3	--	--	--		SP3EQP1	
Front End Loader	Caterpillar 950H	197		E				A		3,732.0	2.74	1.3	--	--	--		SP3EQP1	
20 Yard Dump Truck	Kenworth T800	525		T		2		A		3,732.0	2.74	1.3	--	--	--		SP3EQP1	
Bulldozer	Caterpillar D8T	310		E				A		3,732.0	2.74	1.3	--	--	--		SP3EQP1	
Water Tanker	Peterbilt 340	330		T		1		A		3,732.0	2.74	1.3	--	--	--		SP3EQP1	
Hydroseeder	FINN Model T120 Hydroseeder	35		E				A		3,732.0	2.74	1.3	--	--	--		SP3EQP1	
Site Preparation East Shaft Stage 5 - Installation of Offices						2												
Pickup Truck	Ford F-150	365		T		1		A		970.6	2.74	1.3	--	--	--		SP5EQP1	
Trailer Truck		455		T		1		A		970.6	2.74	1.3	--	--	--		SP5EQP1	
Standard Backhoe	Caterpillar 450E	124		E				A		970.6	2.74	1.3	--	--	--		SP5EQP1	

East Site - Peak Period 1: Site Preparation overlapping with Shaft Construc																					
Nonroad Emissions			PM2.5 24-Hr Emission (g/s) = PM2.5 EF (g/hp-hr) * Engine Horsepower (hp) * Daily Usage Percent * BAT Control Factor * (1hr/3600s); For Row 35-Compressors = 0.053 g/hp-hr * 275 hp * 0.2* 0.15 / 3600 = 1.20E-4 g/s;																	
			for Row 7-Grader (in Area Source) = 0.102 g/hp-hr * 245 hp * 0.8 * 0.15 / 3600 / Source Area (774.1 m2) = 1.08E-6 g/s																	
Short-Term Peak Period - (September 2013)			PM2.5 24-Hr Emission (g/s) = Emission Factor (g/hp-hr) * Horsepower (hp) * Trucks per hour * Idling Time * (1hr/3600s); For Row 25 - Water Tanker = 0.003 g/hp-hr * 330 hp * (1/8) * (5min / 60min) / 3600 = 2.89X10-6 g/																	
Annual Peak Period - (March 2013-February 2014)			PM2.5 24-Hr Emission (g/s) = Emission Factor (g/hp-hr) * Horsepower (hp) * Trucks per hour * Idling Time * Control Factor * (1hr/3600s); For Row 22 - Concrete Truck = 0.0022 g/hp-hr * 455 hp * (1/8) * (45min / 60min) * 0.15 / 3600 =3.91X10-6 g/																	
Equipment	**Model**	**Engine Size (hp)**	**$PM_{2.5}$ EF (g/hp-hr)**	**(Point Source) $PM_{2.5}$ 24-Hr Emission per Eqp (g/s)**	**(Area Source) $PM_{2.5}$ 24-Hr Emission ($g/s/m^2$)**	**$PM_{2.5}$ EF (g/hp-hr)**	**(Point Source) $PM_{2.5}$ Annual Emission per Eqp (g/s)**	**(Area Source) PM2.5 Annual Emission per Eqp (g/s/m2)**	**PM_{10} EF (g/hp-hr)**	**(Point Source) PM_{10} 24-hr Emission per Eqp (g/s)**	**(Area Source) PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)**	**NOx EF (g/hp-hr)**	**(Point Source) NOx Annual Emission per Eqp (g/s)**	**(Area Source) NOx Annual Emission per Eqp (g/s/m2)**	**CO EF (g/hp-hr)**	**(Point Source) CO 1-Hr Emission per Eqp (g/s)**	**(Area Source) CO 1-Hr Emission per Eqp ($g/s/m^2$)**	**CO EF (g/hp-hr)**	**(Point Source) CO 8-Hr Emission per Eqp (g/s)**	**(Area Source) CO 8-Hr Emission per Eqp ($g/s/m^2$)**
Front End Loader	Caterpillar 950H	197	0.057			0.057		2.28E-07	0.059			1.051		4.22E-05	0.560			0.560		
20 Yard Dump Truck	Kenworth T800	525	0.002			0.002		2.12E-09	0.002			0.048		7.33E-05	0.036			0.036		
Bulldozer	Caterpillar D8T	310	0.100			0.100		4.73E-07	0.103			1.917		9.08E-05	0.746			0.746		
Water Tanker	Peterbilt 340	330	0.003			0.003		2.12E-09	0.003			0.077		7.33E-05	0.058			0.058		
Hydroseeder	FINN Model T120 Hydroseeder	35	0.161			0.161		1.15E-08	0.166			1.910		1.36E-07	0.608			0.608		
								1.52E-06						5.38E-04						
Site Preparation East Shaft Stage 3- Grubbing/Stripping/Rough Grading																				
Pickup Truck	Ford F-150	365	0.003			0.003		1.55E-09	0.003			0.069		1.47E-04	0.052			0.052		
Excavator	John Deere 450D LC	348	0.104			0.104		2.02E-07	0.107			1.417		2.75E-05	0.479			0.479		
Standard Backhoe	Caterpillar 450E	124	0.075			0.075		5.57E-08	0.078			1.117		8.25E-06	0.672			0.672		
Front End Loader	Caterpillar 950H	197	0.057			0.057		6.66E-08	0.059			1.051		1.23E-05	0.560			0.560		
20 Yard Dump Truck	Kenworth T800	525	0.002			0.002		1.55E-09	0.002			0.048		1.47E-04	0.036			0.036		
Bulldozer	Caterpillar D8T	310	0.100			0.100		1.73E-07	0.103			1.917		3.32E-05	0.746			0.746		
Water Tanker	Peterbilt 340	330	0.003			0.003		7.75E-10	0.003			0.077		7.33E-05	0.058			0.058		
Hydroseeder	FINN Model T120 Hydroseeder	35	0.161			0.161		8.41E-09	0.166			1.910		9.95E-08	0.608			0.608		
								5.09E-07						4.48E-04						
Site Preparation East Shaft Stage 5 - Installation of Offices																				
Pickup Truck	Ford F-150	365	0.003			0.003		2.98E-10	0.003			0.069		7.33E-05	0.052			0.052		
Trailer Truck		455	0.002			0.002		2.98E-09	0.002			0.056		7.33E-05	0.042			0.042		
Standard Backhoe	Caterpillar 450E	124	0.075			0.075		1.00E-07	0.078			1.117		1.49E-05	0.672			0.672		
								1.04E-07						1.61E-04						

East Connection Site – Tunnel Excavation Emissions

East Site - Peak Period 2: Inundation Plugs												
Nonroad Emissions												
Short-Term Peak Period (February 2016)												
Annual Peak Period (February 2016-January 2017)												
Equipment	Model	Engine Size (hp)	Location	Quantity	Shifts / Day	Hours / Shift	Hours / Day	Days / Week	Daily Usage %	Usage % Over Task	Annual Usage %	Pollutant Load after Control (%)
Inundation Plug Construction												
Plug Hole Construction (With BOP)												
Drill Rigs - Plugs	Schramm T130XD	760	Above Ground	2	2	8	16	5	83%	70%	58%	10%
Pump Shaft Constrcution												
Drill Rigs - Pump Shaft - Pilot Hole	Schramm T130XD	760	Above Ground	1	2	8	16	5	83%	70%	58%	10%
Surface Truck	Tsurumi TE3-100HA	300	Above Ground	9	2	10	20	5				100%

East Site - Peak Period 2: Inundation Plugs																	
Nonroad Emissions																	
Short-Term Peak Period (February 2016)																	
Annual Peak Period (February 2016-January 2017)																	
Equipment	Model	Engine Size (hp)		Source Type (Eqp or Trucks)	Peak Trucks per Day	Average Trucks per Day	ST Source Type (Point or Area)	Annual Source Type (ANN)	ST Source Area (m_2)	ANN Source Area (m_2)	Release Height (m)	Initial Vertical Dimension (m)	Temp (K)	Exit Velocity (m/s)	Diameter (m)	ST Source ID	ANN Source ID
Inundation Plug Construction					9	6											
Plug Hole Construction (With BOP)																	
Drill Rigs - Plugs	Schramm T130XD	760		E			P	P	--	--	2.74	--	523	39.8	0.152	DRILLRI1,2	INPLUG1
Pump Shaft Constrcution																	
Drill Rigs - Pump Shaft - Pilot Hole	Schramm T130XD	760		E			P	P	--	--	2.74	--	523	39.8	0.152	DRILLRI3	INPLUG1
Surface Truck	Tsurumi TE3-100HA	300		T	9	6	A	A	2075.5	2075.6	2.74	1.3	--	--	--	PLUGTRKS	PLUGTRKS

East Site - Peak Period 2: Inundation Plugs

Nonroad Emissions

Short-Term Peak Period (February 2016)

Annual Peak Period (February 2016-January 2017)

Equipment	Model	Engine Size (hp)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ 24-Hr Emission per Eqp (g/s)	$PM_{2.5}$ 24-Hr Emission per Eqp ($g/s/m^2$)	$PM_{2.5}$ EF (g/hp-hr)	$PM_{2.5}$ Annual Emission per Eqp (g/s)	PM2.5 Annual Emission per Eqp (g/s/m2)	PM_{10} EF (g/hp-hr)	PM_{10} 24-Hr Emission per Eqp (g/s)	PM_{10} 24-Hr Emission per Eqp ($g/s/m^2$)	NOx EF (g/hp-hr)	NOx Annual Emission per Eqp (g/s)	NOx Annual Emission per Eqp (g/s/m2)	CO EF (g/hp-hr)	CO 1-Hr Emission per Eqp (g/s)	CO 1-Hr Emission per Eqp ($g/s/m^2$)	CO EF (g/hp-hr)	CO 8-Hr Emission per Eqp (g/s)	CO 8-Hr Emission per Eqp ($g/s/m^2$)
Inundation Plug Construction																				
Plug Hole Construction (With BOP)																				
Drill Rigs - Plugs	Schramm T130XD	760	0.051	8.99E-04		0.051	6.29E-04		0.053	9.27E-04		2.728	3.35E-01		0.783	1.65E-01		0.783	1.37E-01	
Pump Shaft Constrcution																				
Drill Rigs - Pump Shaft - Pilot Hole	Schramm T130XD	760	0.051	8.99E-04		0.051	6.29E-04		0.053	9.27E-04		2.728	3.35E-01		0.783	1.65E-01		0.783	1.37E-01	
Surface Truck	Tsurumi TE3-100HA	300	0.003		5.02E-09	0.003		3.35E-09	0.004		5.46E-09	0.084		8.48E-08	0.064		9.59E-08	0.064		9.59E-08

Fugitive Dust

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$
Transfer, Grading and Rock Removal Operations

West Site

Activity[1]	Analysis Period	Pollutant	Material / Equipment	Operation	Daily hours	Particle Size Multiplier(K)	Control efficiency (%)[3]	Wind Speed (mph)[1]	Moisture Content (%)[2]	Equipment Speed (mph)	Vehicle Miles Traveled / hour on average	Total Daily Material volume (cu. yd)	Total Weight Daily (tons)
East 1 - Site Prep Stage 4 Grading	ST	PM10				0.6	50%						
		PM2.5	Grader	Grading	8	0.031	50%	-	-	5	0.049	-	-
East 1 - Site Prep Stage 4 Material Transfer Dust	ST	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	8	0.053	50%	8.9	3.4	-	-	40	53
East 1 - Site Prep Stage 4 Road Dust	ST	PM10				1.5	50%						
		PM2.5	Dust	Road Dust	8	-	50%	-	-	-	-	-	-
East 1 - Shaft Construction Soil Storage Pile	ST	PM10				0.75	50%						
		PM2.5	Muck	Wind Erosion	24	0.105	50%	-	-	-	-	-	-
East 1 - Shaft Excavation Soil Material Transfer Dust	ST	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	180	237
East 1 - Shaft Excavation Soil Road Dust	ST	PM10				1.5	50%						
		PM2.5	Dust	Road Dust	16	-	50%	-	-	-	-	-	-
East 1 - Shaft Excavation Rock Material Transfer Dust	ST	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	260	342
East 1 - Shaft Excavation Rock Road Dust	ST	PM10				1.5	50%						
		PM2.5	Dust	Road Dust	16	-	50%	-	-	-	-	-	-
East 1 - Site Preparation Stage 4 Grading	ANN	PM10				0.6	50%						
		PM2.5	Grader	Grading	8	0.031	50%	-	-	5	0.049	-	-
East 1 - Site Prep Stage 4 Material Transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	8	0.053	50%	8.9	3.4	-	-	20	26
East 1 - Shaft Construction Soil Storage Pile	ANN	PM10				0.75	50%						
		PM2.5	Muck	Wind Erosion	24	0.105	50%	-	-	-	-	-	-
East 1 - Shaft Excavation Soil Material Transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	100	132
East 1 - Shaft Excavation Rock Material Transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	180	237
East 1 - Secant Pile Material Transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	100	132
East 1 - Site Prep Stage 2 Material Transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	8	0.053	50%	8.9	3.4	-	-	20	26
East 1 - Site Prep Stage 3 Material Transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	8	0.053	50%	8.9	3.4	-	-	40	53
East 2 - Inundation Rig Transfer Dust	ST	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	20	0.053	50%	8.9	3.4	-	-	180	237
East 2 - Inundation Plug Road Dust	ST	PM10				1.5	50%						
		PM2.5	Dust	Road Dust	20	-	50%	-	-	-	-	-	-
East 2 - Inundation Rig Transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	20	0.053	50%	8.9	3.4	-	-	120	158
West 1 - Site Prep Stage 3 Grading	ST	PM10				0.6	50%						
		PM2.5	Grader	Grading	16	0.031	50%	-	-	5	0.263	-	-
West 1 - Site Prep Stage 3 Rock Removal (Truck Loading)	ST	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	16	0.022	50%	-	-	-	-	60	85
West 1 - Site Prep Stage 3 Rock Removal (Truck Unloading)	ST	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	16	0.022	50%	-	-	-	-	60	85
West 1 - Site Prep Stage 3 Crushing	ST	PM10				0.00054	50%						
		PM2.5	Rock	Crushing	16	0.0001	50%	-	-	-	-	60	85
West 1 - Site Prep Stage 3 Material transfer Dust	ST	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	80	105
West 1 - Site Prep Stage 3 Road Dust	ST	PM10				1.5	50%						
		PM2.5	Dust	Road Dust	16	-	50%	-	-	-	-	-	-

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$

Transfer, Grading and Rock Removal Operations

West Site

Activity[1]	Analysis Period	Pollutant	Pile Size (ft^2)	Daily Trucks	Average Vehicle Weight (tons)	Average Travel Distance (ft)	Emission Factor[6]	EF Unit	PM Emissions per cycle lb/hour	Transfers	Total PM Emissions[4] lb/hour	Total PM Emissions[4] ST (g/s)	Area Source
East 1 - Site Prep Stage 4 Grading	ST	PM10					7.65E-01	lb/VMT	1.86E-02	1	1.86E-02	**2.34E-03**	774.10
		PM2.5	-	-	-	-	3.95E-02	lb/VMT	9.59E-04	1	9.59E-04	**1.21E-04**	774.10
East 1 - Site Prep Stage 4 Material Transfer Dust	ST	PM10					1.13E-03	lb/ton	3.71E-03	2	7.42E-03	**9.35E-04**	774.10
		PM2.5	-	-	-	-	1.71E-04	lb/ton	5.62E-04	2	1.12E-03	**1.42E-04**	774.10
East 1 - Site Prep Stage 4 Road Dust	ST	PM10					2.93E-02	lb/VMT	3.16E-03	1	3.16E-03	**3.98E-04**	
		PM2.5	-	5	20	1,820	-		-	-	-	**-**	-
East 1 - Shaft Construction Soil Storage Pile	ST	PM10					0.38	ton/acre/yr	9.15E-04	1	9.15E-04	**1.15E-04**	113.8
		PM2.5	1,225	-	-	-		ton/acre/yr	1.28E-04	1	1.28E-04	**1.61E-05**	113.8
East 1 - Shaft Excavation Soil Material Transfer Dust	ST	PM10					1.13E-03	lb/ton	8.35E-03	2	1.67E-02	**2.10E-03**	122.8
		PM2.5	-	-	-	-	1.71E-04	lb/ton	1.26E-03	2	2.53E-03	**3.19E-04**	122.8
East 1 - Shaft Excavation Soil Road Dust	ST	PM10					2.93E-02	lb/VMT	6.32E-03	1	6.32E-03	**7.97E-04**	
		PM2.5	-	20	20	1,820	-		-	-	-	**-**	-
East 1 - Shaft Excavation Rock Material Transfer Dust	ST	PM10					1.13E-03	lb/ton	1.21E-02	2	2.41E-02	**3.04E-03**	122.8
		PM2.5	-	-	-	-	1.71E-04	lb/ton	1.83E-03	2	3.65E-03	**4.60E-04**	122.8
East 1 - Shaft Excavation Rock Road Dust	ST	PM10					2.93E-02	lb/VMT	6.32E-03	1	6.32E-03	**7.97E-04**	
		PM2.5	-	20	20	1,820	-		-	-	-	**-**	-
East 1 - Site Preparation Stage 4 Grading	ANN	PM10					7.65E-01	lb/VMT	1.86E-02	1	1.86E-02	**2.34E-03**	
		PM2.5	-	-	-	-	3.95E-02	lb/VMT	9.59E-04	1	9.59E-04	**1.21E-04**	
East 1 - Site Prep Stage 4 Material Transfer Dust	ANN	PM10					1.13E-03	lb/ton	1.86E-03	2	3.71E-03	**4.67E-04**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	2.81E-04	2	5.62E-04	**7.08E-05**	
East 1 - Shaft Construction Soil Storage Pile	ANN	PM10					0.38	ton/acre/yr	9.15E-04	1	9.15E-04	**1.15E-04**	
		PM2.5	1,225	-	-	-		ton/acre/yr	1.28E-04	1	1.28E-04	**1.61E-05**	
East 1 - Shaft Excavation Soil Material Transfer Dust	ANN	PM10					1.13E-03	lb/ton	4.64E-03	2	9.28E-03	**1.17E-03**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	7.02E-04	2	1.40E-03	**1.77E-04**	
East 1 - Shaft Excavation Rock Material Transfer Dust	ANN	PM10					1.13E-03	lb/ton	8.35E-03	2	1.67E-02	**2.10E-03**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	1.26E-03	2	2.53E-03	**3.19E-04**	
East 1 - Secant Pile Material Transfer Dust	ANN	PM10					1.13E-03	lb/ton	4.64E-03	2	9.28E-03	**1.17E-03**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	7.02E-04	2	1.40E-03	**1.77E-04**	
East 1 - Site Prep Stage 2 Material Transfer Dust	ANN	PM10					1.13E-03	lb/ton	1.86E-03	2	3.71E-03	**4.67E-04**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	2.81E-04	2	5.62E-04	**7.08E-05**	
East 1 - Site Prep Stage 3 Material Transfer Dust	ANN	PM10					1.13E-03	lb/ton	3.71E-03	2	7.42E-03	**9.35E-04**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	5.62E-04	2	1.12E-03	**1.42E-04**	
East 2 - Inundation Rig Transfer Dust	ST	PM10					1.13E-03	lb/ton	6.68E-03	2	1.34E-02	**1.68E-03**	2075.5
		PM2.5	-	-	-	-	1.71E-04	lb/ton	1.01E-03	2	2.02E-03	**2.55E-04**	2075.5
East 2 - Inundation Plug Road Dust	ST	PM10					2.93E-02	lb/VMT	6.88E-03	1	6.88E-03	**8.67E-04**	
		PM2.5	-	9	20	5,500	-		-	-	-	**-**	-
East 2 - Inundation Rig Transfer Dust	ANN	PM10					1.13E-03	lb/ton	4.45E-03	2	8.90E-03	**1.12E-03**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	6.74E-04	2	1.35E-03	**1.70E-04**	
West 1 - Site Prep Stage 3 Grading	ST	PM10					7.65E-01	lb/VMT	1.01E-01	1	1.01E-01	**1.27E-02**	8,845.0
		PM2.5	-	-	-	-	3.95E-02	lb/VMT	5.19E-03	1	5.19E-03	**6.54E-04**	8,845.0
West 1 - Site Prep Stage 3 Rock Removal (Truck Loading)	ST	PM10					1.00E-04	lb/ton	2.66E-04	1	2.66E-04	**3.35E-05**	9,327.2
		PM2.5	-	-	-	-	2.93E-06	lb/ton	7.80E-06	1	7.80E-06	**9.82E-07**	9,327.2
West 1 - Site Prep Stage 3 Rock Removal (Truck Unloading)	ST	PM10					1.60E-05	lb/ton	4.25E-05	1	4.25E-05	**5.36E-06**	9,327.2
		PM2.5	-	-	-	-	4.69E-07	lb/ton	1.25E-06	1	1.25E-06	**1.57E-07**	9,327.2
West 1 - Site Prep Stage 3 Crushing	ST	PM10					2.40E-03	lb/ton	6.38E-03	1	6.38E-03	**8.04E-04**	9,327.2
		PM2.5	-	-	-	-	4.44E-04	lb/ton	1.18E-03	1	1.18E-03	**1.49E-04**	9,327.2
West 1 - Site Prep Stage 3 Material transfer Dust	ST	PM10					1.13E-03	lb/ton	3.71E-03	2	7.42E-03	**9.35E-04**	29,098.1
		PM2.5	-	-	-	-	1.71E-04	lb/ton	5.62E-04	2	1.12E-03	**1.42E-04**	29,098.1
West 1 - Site Prep Stage 3 Road Dust	ST	PM10					2.93E-02	lb/VMT	2.10E-02	1	2.10E-02	**2.65E-03**	
		PM2.5	-	22	20	5500	-		-	-	-	**-**	-

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$

Transfer, Grading and Rock Removal Operations

West Site

Activity[1]	Analysis Period	Pollutant	PM2.5 ST Emission Rate (g/s/m2)		Source Name	Area Source	PM2.5 ANN Emission Rate (g/s/m2)
East 1 - Site Prep Stage 4 Grading	ST	PM10	3.02E-06		SPGDST1		
		PM2.5	1.56E-07		SPGDST1		
East 1 - Site Prep Stage 4 Material Transfer Dust	ST	PM10	1.21E-06		SPTDST1		
		PM2.5	1.83E-07		SPTDST1		
East 1 - Site Prep Stage 4 Road Dust	ST	PM10					
		PM2.5	-				
East 1 - Shaft Construction Soil Storage Pile	ST	PM10	1.01E-06		PILE1		
		PM2.5	1.42E-07		PILE1		
East 1 - Shaft Excavation Soil Material Transfer Dust	ST	PM10	1.71E-05		SSTDST1		
		PM2.5	2.59E-06		SSTDST1		
East 1 - Shaft Excavation Soil Road Dust	ST	PM10					
		PM2.5	-				
East 1 - Shaft Excavation Rock Material Transfer Dust	ST	PM10	2.47E-05		SRTDST1		
		PM2.5	3.75E-06		SRTDST1		
East 1 - Shaft Excavation Rock Road Dust	ST	PM10					
		PM2.5	-				
East 1 - Site Preparation Stage 4 Grading	ANN	PM10					
		PM2.5			SP4GDST1	774.10	1.56E-07
East 1 - Site Prep Stage 4 Material Transfer Dust	ANN	PM10					
		PM2.5			SP4TDST1	774.10	9.15E-08
East 1 - Shaft Construction Soil Storage Pile	ANN	PM10					
		PM2.5			PILE1	113.8	1.42E-07
East 1 - Shaft Excavation Soil Material Transfer Dust	ANN	PM10					
		PM2.5			SSTDST1	122.8	1.44E-06
East 1 - Shaft Excavation Rock Material Transfer Dust	ANN	PM10					
		PM2.5			SRTDST1	122.8	2.59E-06
East 1 - Secant Pile Material Transfer Dust	ANN	PM10					
		PM2.5			SECDST1	402.50	4.40E-07
East 1 - Site Prep Stage 2 Material Transfer Dust	ANN	PM10					
		PM2.5			SP2TDST1	1,362.90	5.19E-08
East 1 - Site Prep Stage 3 Material Transfer Dust	ANN	PM10					
		PM2.5			SP3TDST1	3,732.00	3.79E-08
East 2 - Inundation Rig Transfer Dust	ST	PM10	8.11E-07		PLUGTDST		
		PM2.5	1.23E-07		PLUGTDST		
East 2 - Inundation Plug Road Dust	ST	PM10					
		PM2.5	-				
East 2 - Inundation Rig Transfer Dust	ANN	PM10					
		PM2.5			PLUGTDST	2075.6	8.19E-08
West 1 - Site Prep Stage 3 Grading	ST	PM10	1.43E-06		SP3GDST1		
		PM2.5	7.40E-08		SP3GDST1		
West 1 - Site Prep Stage 3 Rock Removal (Truck Loading)	ST	PM10	3.59E-09				
		PM2.5	1.05E-10				
West 1 - Site Prep Stage 3 Rock Removal (Truck Unloading)	ST	PM10	5.74E-10				
		PM2.5	1.69E-11				
West 1 - Site Prep Stage 3 Crushing	ST	PM10	8.62E-08	9.03E-08	SP3RDST1		
		PM2.5	1.60E-08	1.61E-08	SP3RDST1		
West 1 - Site Prep Stage 3 Material transfer Dust	ST	PM10	3.21E-08		SP3TDST1		
		PM2.5	4.87E-09		SP3TDST1		
West 1 - Site Prep Stage 3 Road Dust	ST	PM10					
		PM2.5	-				

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$
Transfer, Grading and Rock Removal Operations

West Site

Activity[1]	Analysis Period	Pollutant	Material / Equipment	Operation	Daily hours	Particle Size Multiplier(K)	Control efficiency (%)[3]	Wind Speed (mph)[1]	Moisture Content (%)[2]	Equipment Speed (mph)	Vehicle Miles Traveled / hour on average	Total Daily Material volume (cu. yd)	Total Weight Daily (tons)
West 1 - Site Prep Stage 3 Grading	ANN	PM10				0.6	50%						
		PM2.5	Grader	Grading	16	0.031	50%	-	-	5	0.263	-	-
West 1 - Site Prep Stage 3 Rock Removal (Truck Loading)	ANN	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	16	0.022	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 3 Rock Removal (Truck Unloading)	ANN	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	16	0.022	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 3 Crushing	ANN	PM10				0.00054	50%						
		PM2.5	Rock	Crushing	16	0.0001	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 3 Material transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	60	79
West 1 - Site Prep Stage 1 Grading	ANN	PM10				0.6	50%						
		PM2.5	Grader	Grading	12	0.031	50%	-	-	5	0.500	-	-
West 1 - Site Prep Stage 1 Material transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	12	0.053	50%	8.9	3.4	-	-	70	92
West 1 - Site Prep Stage 2 Material transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	12	0.053	50%	8.9	3.4	-	-	110	145
West 1 - Site Prep Stage 4 Grading	ANN	PM10				0.6	50%						
		PM2.5	Grader	Grading	16	0.031	50%	-	-	5	0.179	-	-
West 1 - Site Prep Stage 4 Rock Removal (Truck Loading)	ANN	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	16	0.022	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 4 Rock Removal (Truck Unloading)	ANN	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	16	0.022	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 4 Crushing	ANN	PM10				0.00054	50%						
		PM2.5	Rock	Crushing	16	0.0001	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 4 Material transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	20	26
West 1 - Site Prep Stage 5 Grading	ANN	PM10				0.6	50%						
		PM2.5	Grader	Grading	16	0.031	50%	-	-	5	0.131	-	-
West 1 - Site Prep Stage 5 Rock Removal (Truck Loading)	ANN	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	16	0.022	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 5 Rock Removal (Truck Unloading)	ANN	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	16	0.022	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 5 Crushing	ANN	PM10				0.00054	50%						
		PM2.5	Rock	Crushing	16	0.0001	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 5 Material transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	16	0.053	50%	8.9	3.4	-	-	20	26
West 1 - Site Prep Stage 6 Grading	ANN	PM10				0.6	50%						
		PM2.5	Grader	Grading	12	0.031	50%	-	-	5	0.175	-	-
West 1 - Site Prep Stage 6 Rock Removal (Truck Loading)	ANN	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	12	0.022	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 6 Rock Removal (Truck Unloading)	ANN	PM10				0.75	50%						
		PM2.5	Rock	Rock Removal	12	0.022	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 6 Crushing	ANN	PM10				0.00054	50%						
		PM2.5	Rock	Crushing	12	0.0001	50%	-	-	-	-	30	43
West 1 - Site Prep Stage 6 Material transfer Dust	ANN	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	12	0.053	50%	8.9	3.4	-	-	20	26
West 2 - Storage Pile	ST	PM10				0.75	50%						
		PM2.5	Muck	Wind Erosion	24	0.105	50%	-	-	-	-	-	-
West 2 - TBM Tunneling Material transfer Dust	ST	PM10		Material		0.35	50%						
		PM2.5	Muck	Transfer	24	0.053	50%	8.9	3.4	-	-	1,160	1527
West 2 - TBM Tunneling Road Dust	ST	PM10				1.5	50%						
		PM2.5	Dust	Road Dust	24	-	50%	-	-	-	-	-	-
West 2 - Innundation Plugs Road Dust	ST	PM10				1.5	50%						
		PM2.5	Dust	Road Dust	20	-	50%	-	-	-	-	-	-
West 2 - Storage Pile	ANN	PM10				0.75	50%						

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$
Transfer, Grading and Rock Removal Operations

West Site									PM Emissions per cycle		Total PM Emissions[4]		
Activity[1]	Analysis Period	Pollutant	Pile Size (ft^2)	Daily Trucks	Average Vehicle Weight (tons)	Average Travel Distance (ft)	Emission Factor[6]	EF Unit	lb/hour	Transfers	lb/hour	ST (g/s)	Area Source
West 1 - Site Prep Stage 3 Grading	**ANN**	PM10					7.65E-01	lb/VMT	1.01E-01	1	1.01E-01	**1.27E-02**	
		PM2.5	-	-	-	-	3.95E-02	lb/VMT	5.19E-03	1	5.19E-03	**6.54E-04**	
West 1 - Site Prep Stage 3 Rock Removal (Truck Loading)	**ANN**	PM10					1.00E-04	lb/ton	1.33E-04	1	1.33E-04	**1.67E-05**	
		PM2.5	-	-	-	-	2.93E-06	lb/ton	3.90E-06	1	3.90E-06	**4.91E-07**	
West 1 - Site Prep Stage 3 Rock Removal (Truck Unloading)	**ANN**	PM10					1.60E-05	lb/ton	2.13E-05	1	2.13E-05	**2.68E-06**	
		PM2.5	-	-	-	-	4.69E-07	lb/ton	6.24E-07	1	6.24E-07	**7.86E-08**	
West 1 - Site Prep Stage 3 Crushing	**ANN**	PM10					2.40E-03	lb/ton	3.19E-03	1	3.19E-03	**4.02E-04**	
		PM2.5	-	-	-	-	4.44E-04	lb/ton	5.91E-04	1	5.91E-04	**7.44E-05**	
West 1 - Site Prep Stage 3 Material transfer Dust	**ANN**	PM10					1.13E-03	lb/ton	2.78E-03	2	5.57E-03	**7.01E-04**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	4.21E-04	2	8.43E-04	**1.06E-04**	
West 1 - Site Prep Stage 1 Grading	**ANN**	PM10					7.65E-01	lb/VMT	1.91E-01	1	1.91E-01	**2.41E-02**	
		PM2.5	-	-	-	-	3.95E-02	lb/VMT	9.88E-03	1	9.88E-03	**1.25E-03**	
West 1 - Site Prep Stage 1 Material transfer Dust	**ANN**	PM10					1.13E-03	lb/ton	4.33E-03	2	8.66E-03	**1.09E-03**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	6.55E-04	2	1.31E-03	**1.65E-04**	
West 1 - Site Prep Stage 2 Material transfer Dust	**ANN**	PM10					1.13E-03	lb/ton	6.80E-03	2	1.36E-02	**1.71E-03**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	1.03E-03	2	2.06E-03	**2.60E-04**	
West 1 - Site Prep Stage 4 Grading	**ANN**	PM10					7.65E-01	lb/VMT	6.83E-02	1	6.83E-02	**8.60E-03**	
		PM2.5	-	-	-	-	3.95E-02	lb/VMT	3.53E-03	1	3.53E-03	**4.44E-04**	
West 1 - Site Prep Stage 4 Rock Removal (Truck Loading)	**ANN**	PM10					1.00E-04	lb/ton	1.33E-04	1	1.33E-04	**1.67E-05**	
		PM2.5	-	-	-	-	2.93E-06	lb/ton	3.90E-06	1	3.90E-06	**4.91E-07**	
West 1 - Site Prep Stage 4 Rock Removal (Truck Unloading)	**ANN**	PM10					1.60E-05	lb/ton	2.13E-05	1	2.13E-05	**2.68E-06**	
		PM2.5	-	-	-	-	4.69E-07	lb/ton	6.24E-07	1	6.24E-07	**7.86E-08**	
West 1 - Site Prep Stage 4 Crushing	**ANN**	PM10					2.40E-03	lb/ton	3.19E-03	1	3.19E-03	**4.02E-04**	
		PM2.5	-	-	-	-	4.44E-04	lb/ton	5.91E-04	1	5.91E-04	**7.44E-05**	
West 1 - Site Prep Stage 4 Material transfer Dust	**ANN**	PM10					1.13E-03	lb/ton	9.28E-04	2	1.86E-03	**2.34E-04**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	1.40E-04	2	2.81E-04	**3.54E-05**	
West 1 - Site Prep Stage 5 Grading	**ANN**	PM10					7.65E-01	lb/VMT	5.03E-02	1	5.03E-02	**6.33E-03**	
		PM2.5	-	-	-	-	3.95E-02	lb/VMT	2.60E-03	1	2.60E-03	**3.27E-04**	
West 1 - Site Prep Stage 5 Rock Removal (Truck Loading)	**ANN**	PM10					1.00E-04	lb/ton	1.33E-04	1	1.33E-04	**1.67E-05**	
		PM2.5	-	-	-	-	2.93E-06	lb/ton	3.90E-06	1	3.90E-06	**4.91E-07**	
West 1 - Site Prep Stage 5 Rock Removal (Truck Unloading)	**ANN**	PM10					1.60E-05	lb/ton	2.13E-05	1	2.13E-05	**2.68E-06**	
		PM2.5	-	-	-	-	4.69E-07	lb/ton	6.24E-07	1	6.24E-07	**7.86E-08**	
West 1 - Site Prep Stage 5 Crushing	**ANN**	PM10					2.40E-03	lb/ton	3.19E-03	1	3.19E-03	**4.02E-04**	
		PM2.5	-	-	-	-	4.44E-04	lb/ton	5.91E-04	1	5.91E-04	**7.44E-05**	
West 1 - Site Prep Stage 5 Material transfer Dust	**ANN**	PM10					1.13E-03	lb/ton	9.28E-04	2	1.86E-03	**2.34E-04**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	1.40E-04	2	2.81E-04	**3.54E-05**	
West 1 - Site Prep Stage 6 Grading	**ANN**	PM10					7.65E-01	lb/VMT	6.70E-02	1	6.70E-02	**8.44E-03**	
		PM2.5	-	-	-	-	3.95E-02	lb/VMT	3.46E-03	1	3.46E-03	**4.36E-04**	
West 1 - Site Prep Stage 6 Rock Removal (Truck Loading)	**ANN**	PM10					1.00E-04	lb/ton	1.77E-04	1	1.77E-04	**2.23E-05**	
		PM2.5	-	-	-	-	2.93E-06	lb/ton	5.20E-06	1	5.20E-06	**6.55E-07**	
West 1 - Site Prep Stage 6 Rock Removal (Truck Unloading)	**ANN**	PM10					1.60E-05	lb/ton	2.84E-05	1	2.84E-05	**3.57E-06**	
		PM2.5	-	-	-	-	4.69E-07	lb/ton	8.32E-07	1	8.32E-07	**1.05E-07**	
West 1 - Site Prep Stage 6 Crushing	**ANN**	PM10					2.40E-03	lb/ton	4.25E-03	1	4.25E-03	**5.36E-04**	
		PM2.5	-	-	-	-	4.44E-04	lb/ton	7.88E-04	1	7.88E-04	**9.92E-05**	
West 1 - Site Prep Stage 6 Material transfer Dust	**ANN**	PM10					1.13E-03	lb/ton	1.24E-03	2	2.47E-03	**3.12E-04**	
		PM2.5	-	-	-	-	1.71E-04	lb/ton	1.87E-04	2	3.75E-04	**4.72E-05**	
West 2 - Storage Pile	**ST**	PM10					0.38	ton/acre/yr	2.33E-02	1	2.33E-02	**2.93E-03**	2894.2
		PM2.5	31,153	-	-	-		ton/acre/yr	3.26E-03	1	3.26E-03	**4.10E-04**	2894.2
West 2 - TBM Tunneling Material transfer Dust	**ST**	PM10					1.13E-03	lb/ton	3.59E-02	2	7.17E-02	**9.04E-03**	573.7
		PM2.5	-	-	-	-	1.71E-04	lb/ton	5.43E-03	2	1.09E-02	**1.37E-03**	573.7
West 2 - TBM Tunneling Road Dust	**ST**	PM10					2.93E-02	lb/VMT	4.90E-02	1	4.90E-02	**6.18E-03**	
		PM2.5	-	77	20	5,500	-		-	-	-	**-**	-
West 2 - Innundation Plugs Road Dust	**ST**	PM10					2.93E-02	lb/VMT	6.88E-03	1	6.88E-03	**8.67E-04**	
		PM2.5	-	9	20	5,500	-		-	-	-	**-**	-
West 2 - Storage Pile	**ANN**	PM10					0.38	ton/acre/yr	2.33E-02	1	2.33E-02	**2.93E-03**	

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$

Transfer, Grading and Rock Removal Operations

West Site

Activity[1]	Analysis Period	Pollutant	PM2.5 ST Emission Rate (g/s/m2)		Source Name	Area Source	PM2.5 ANN Emission Rate (g/s/m2)		
West 1 - Site Prep Stage 3 Grading	**ANN**	PM10							
		PM2.5			SP3GDST1	8,845.0	7.40E-08		
West 1 - Site Prep Stage 3 Rock Removal (Truck Loading)	**ANN**	PM10							
		PM2.5				29098.1	1.69E-11		
West 1 - Site Prep Stage 3 Rock Removal (Truck Unloading)	**ANN**	PM10							
		PM2.5				29098.1	2.70E-12		
West 1 - Site Prep Stage 3 Crushing	**ANN**	PM10							
		PM2.5			SP3RDST1	29098.1	2.56E-09	2.58E-09	
West 1 - Site Prep Stage 3 Material transfer Dust	**ANN**	PM10							
		PM2.5			SP3TDST1	29098.1	3.65E-09		
West 1 - Site Prep Stage 1 Grading	**ANN**	PM10							
		PM2.5			SP1GDST1	10,332.3	1.20E-07		
West 1 - Site Prep Stage 1 Material transfer Dust	**ANN**	PM10							
		PM2.5			SP1TDST1	29098.1	5.68E-09		
West 1 - Site Prep Stage 2 Material transfer Dust	**ANN**	PM10							
		PM2.5			SP2TDST1	96,739.8	2.68E-09		
West 1 - Site Prep Stage 4 Grading	**ANN**	PM10							
		PM2.5			SP4GDST1	5,104.0	8.71E-08		
West 1 - Site Prep Stage 4 Rock Removal (Truck Loading)	**ANN**	PM10							
		PM2.5				10330.7	4.75E-11		
West 1 - Site Prep Stage 4 Rock Removal (Truck Unloading)	**ANN**	PM10							
		PM2.5				10330.7	7.61E-12		
West 1 - Site Prep Stage 4 Crushing	**ANN**	PM10							
		PM2.5			SP4RDST1	10330.7	7.20E-09	7.26E-09	
West 1 - Site Prep Stage 4 Material transfer Dust	**ANN**	PM10							
		PM2.5			SP4TDST1	10330.7	3.43E-09		
West 1 - Site Prep Stage 5 Grading	**ANN**	PM10							
		PM2.5			SP5GDST1	5,014.2	6.52E-08		
West 1 - Site Prep Stage 5 Rock Removal (Truck Loading)	**ANN**	PM10							
		PM2.5				10330.7	4.75E-11		
West 1 - Site Prep Stage 5 Rock Removal (Truck Unloading)	**ANN**	PM10							
		PM2.5				10330.7	7.61E-12		
West 1 - Site Prep Stage 5 Crushing	**ANN**	PM10							
		PM2.5			SP5RDST1	10330.7	7.20E-09	7.26E-09	
West 1 - Site Prep Stage 5 Material transfer Dust	**ANN**	PM10							
		PM2.5			SP5TDST1	10330.7	3.43E-09		
West 1 - Site Prep Stage 6 Grading	**ANN**	PM10							
		PM2.5			SP6GDST1	3,953.7	1.10E-07		
West 1 - Site Prep Stage 6 Rock Removal (Truck Loading)	**ANN**	PM10							
		PM2.5				9324.2	7.02E-11		
West 1 - Site Prep Stage 6 Rock Removal (Truck Unloading)	**ANN**	PM10							
		PM2.5				9324.2	1.12E-11		
West 1 - Site Prep Stage 6 Crushing	**ANN**	PM10							
		PM2.5			SP6RDST1	9324.2	1.06E-08	1.07E-08	
West 1 - Site Prep Stage 6 Material transfer Dust	**ANN**	PM10							
		PM2.5			SP6TDST1	9324.2	5.06E-09		
West 2 - Storage Pile	**ST**	PM10	1.01E-06		PILE1				
		PM2.5	1.42E-07		PILE1				
West 2 - TBM Tunneling Material transfer Dust	**ST**	PM10	1.58E-05		TBMTDST1				
		PM2.5	2.39E-06		TBMTDST1				
West 2 - TBM Tunneling Road Dust	**ST**	PM10							
		PM2.5	-						
West 2 - Innundation Plugs Road Dust	**ST**	PM10							
		PM2.5	-						
West 2 - Storage Pile	**ANN**	PM10							

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$

Transfer, Grading and Rock Removal Operations

West Site

Activity[1]	Analysis Period	Pollutant	Material / Equipment	Operation	Daily hours	Particle Size Multiplier(K)	Control efficiency (%)[3]	Wind Speed (mph)[1]	Moisture Content (%)[2]	Equipment Speed (mph)	Vehicle Miles Traveled / hour on average	Total Daily Material volume (cu. yd)	Total Weight Daily (tons)
~~West 2 - Storage Pile~~		PM2.5	Muck	Wind Erosion	24	0.105	50%	-	-	-	-	-	-
West 2 - TBM Tunneling Material transfer Dust	**ANN**	PM10	Muck	Material Transfer	24	0.35	50%	8.9	3.4	-	-	600	790
		PM2.5				0.053	50%						
West 2 - Erecting TBM Material transfer Dust	**ANN**	PM10	Muck	Material Transfer	24	0.35	50%	8.9	3.4	-	-	40	53
		PM2.5				0.053	50%						

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$

Transfer, Grading and Rock Removal Operations

West Site									PM Emissions per cycle		Total PM Emissions[4]		
Activity[1]	Analysis Period	Pollutant	Pile Size (ft^2)	Daily Trucks	Average Vehicle Weight (tons)	Average Travel Distance (ft)	Emission Factor[6]	EF Unit	lb/hour	Transfers	lb/hour	ST (g/s)	Area Source
West 2 - Storage Pile		PM2.5	31,153	-	-	-	0.58	ton/acre/yr	3.26E-03	1	3.26E-03	**4.10E-04**	
West 2 - TBM Tunneling Material transfer Dust	ANN	PM10	-	-	-	-	1.13E-03	lb/ton	1.86E-02	2	3.71E-02	**4.67E-03**	
		PM2.5					1.71E-04	lb/ton	2.81E-03	2	5.62E-03	**7.08E-04**	
West 2 - Erecting TBM Material transfer Dust	ANN	PM10	-	-	-	-	1.13E-03	lb/ton	1.24E-03	2	2.47E-03	**3.12E-04**	
		PM2.5					1.71E-04	lb/ton	1.87E-04	2	3.75E-04	**4.72E-05**	

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$

Transfer, Grading and Rock Removal Operations

West Site

Activity[1]	Analysis Period	Pollutant	PM2.5 ST Emission Rate (g/s/m2)		Source Name	Area Source	PM2.5 ANN Emission Rate (g/s/m2)		
~~West 2 - Storage Pile~~		PM2.5			PILE1	2894.2	1.42E-07		
West 2 - TBM Tunneling Material transfer Dust	**ANN**	PM10							
		PM2.5			TBMTDST1	573.7	1.23E-06		
West 2 - Erecting TBM Material transfer Dust	**ANN**	PM10							
		PM2.5			ERETDST1	573.7	8.23E-08		

Fugitive Dust Sources - PM_{10} and $PM_{2.5}$

Transfer, Grading and Rock Removal Operations

West Site

	Activity[1]	Analysis Period	Pollutant	Pile Size (ft^2)	Daily Trucks	Average Vehicle Weight (tons)	Average Travel Distance (ft)	Emission Factor[6]	EF Unit	PM Emissions per cycle lb/hour	PM Emissions per cycle Transfers	Total PM Emissions[4] lb/hour	Total PM Emissions[4] ST (g/s)	Area Source
	Notes:													
[1]	Average Wind Speed: http://www.ncdc.noaa.gov/oa/climate/online/ccd/wndspd.txt - Albany			V	**Storage Piles (Topsoil Blowing) - Section 11.9**									
[2]	Moisture Content: http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0204.pdf				Wind erosion factor		0.38 ton/acre/yr		(Table 11.19-4)					
[3]	Fugitive dust mitigation from water spraying earns a 50% reduction credit.													
[4]	Material load to the pile and from pile to the truck is considered as two drops operations.				$E_R = E_f$ (lb/hr per acre) * size of storage area (acres) * PM fraction * 453.59 / 60 /60									
					where:									
	Operations				$E_R = PM_{10}$ emission rate in gram per second									
I	**Material Transfers - AP42 - Section 13.2.4**				E_f = total PM emission factor in lb/hr per acre from AP-42 Table 11.9-4, based on "exposed areas" for "overburden"									
	$E_f = k * (0.0032) * (U/5)^{1.3} / (M/2)^{1.4}$				0.75 = PM_{10} fraction of total dust emissions obtained from Table 11.9-1 (Overburden)									
	where:				0.105 = $PM_{2.5}$ fraction of total dust emissions obtained from Table 11.9-1 (overburden)									
	E_f = size specific emission factor in pounds per ton (lb/ton)													
	k = an empirical constant selected from AP-42 (0.35 for PM_{10} and 0.053 for $PM_{2.5}$)			VI	**Paved Road Dust - Section 13.2.1**									
	U = mean wind speed (mph)				$E_f = k * (sL)0.91 * (W)1.02$									
	M = material moisture content in percent moisture (%) from Table 13.2.4-1 of AP-42 (for clay				where:									
					E_f = size specific emission factor (lb/VMT)									
	$E_R = E_f PM_{10}$ * (Total Weight) / Hrs/Day * 453.59 / 60 / 60				k = partical size multiplier selected from AP-42 Table 13.2.1-1 for PM_{10} (0.0022 lb/VMT)									
	where:				sL = road surface silt loading selected from AP-42 Table 13.2.1-2 (0.6 g/m2 for ADT <500)									
	$E_R = PM_{10}$ emission rate in grams per second				W = mean vehicle weight (tons)									
	$E_f PM_{10} = PM_{10}$ emission factor in lb/ton													
	Total Weight = Soil volume in cy * Soil density / 2,000 lbs/ton, where soil density from AP-42				$E_R = (E_f$ unpaved * VMT) * 453.59 (g/lb) / 60 (min/hr) / 60 (s/min)									
					where:									
II	**Grading Operations - AP42 - Section 11.9.1**				$E_R = PM_{10}$ emission rate in grams per second									
	$E_f = 0.051 * (S)^{2.0}$ * PM scaling factor				Ef unpaved = unpaved road emission factor in lb/VMT									
	where:				VMT = vehicle miles traveled									
	E_f = size specific emission factor in pounds per vehicle mile traveled (lb/VMT)													
	S = mean vehicle speed (mph) - 7.1 mph for Graders (Table 11.9-3)													
	PM scaling factor = an empirical constant selected from AP-42 (Table 11.9-1)													
	$E_R = E_f PM$ * miles traveled * 453.59 / 60 / 60													
	where:													
	E_R = PM emission rate in grams per second													
	E_f PM= PM emission factor in lb/VMT													
III	**Rock Removal Operations - Section 11.19.2**													
	Truck Loading		1.0 E-4 lb/to											
	Truck Unloading		1.6 E-5 lb/to											
	PM10 - PM2.5 Ratio		0.75/0.022											
	Assume truck volumes for hauling rock are 20 cubic yards and have a weight of 25 tons.													
	$E_R = E_f PM$ (lb/ton) * (amount of rock material moved (tons)) * (453.59 g/lb) / 60 / 60													
	where:													
	E_R = PM emission rate in gram per second													
	E_f PM = PM emission factor in lb/ton													
IV	**Crushing Operations - Section 11.19.2**													
	Crushing		2.4E-3 lb/to											
	PM10 - PM2.5 Ratio		0.00054/0.0											
	$E_R = E_f PM$ (lb/ton) * (amount of rock materials crushed (tons)) * (453.59 g/lb) / 60 / 60													
	where:													
	E_R = PM emission rate in gram per second													
	E_f PM = PM emission factor in lb/ton													

Concrete Batch Emissions

Concrete Batching Plant

PM_{10} and $PM_{2.5}$ Material Transfer Source Emissions

Emission Rates	Release Height (m)	Initial Vertical Dispersion (m)	Size of Area Source (m^2)	PM_{10} Short-Term Emissions (g/s; g/s/m^2)	$PM_{2.5}$ Short-Term Emissions (g/s; g/s/m^2)	$PM_{2.5}$ Annual Emissions (g/s; g/s/m^2)			per silo	per silo	per silo
Unloading to Elevated Storage Silo (C&CS)	18	--	--	8.18E-04	1.47E-04	2.01E-05	CONSILO1,2	Control Emission Factor from AP-42	4.09E-04	7.36E-05	1.00E-05
Mixer Loading into Concrete Trucks	3.1	--	--	4.84E-03	8.70E-04	1.19E-04	CONTMIX1	Control Emission Factor from AP-42			
Weigh Hopper Loading	7.6	--	--	1.44E-05	2.18E-06	2.97E-07	CONHOP1	99.9% Control			
Delivery to Ground Storage (S&A)	1	0.5	1260.8	2.34E-06	3.54E-07	4.84E-08	CONMAT1	75% Control			
Transfer to Conveyor (S&A)	1.83	0.9	92.2	6.40E-05	9.69E-06	1.32E-06	CONBELT1	50% Control			
Transfer to Elevated Storage (S&A)	7.6	3.5	64.5	1.83E-07	2.77E-08	3.78E-09	CONDROP1	99.9% Control			
Storage Piles	1	0.5	724.6	2.52E-06	3.53E-07	4.81E-08	CONPILE1	75% Control			
Equipment (Engine Emissions + Road Dust)	2.74	1.3	545.9	6.94E-07	2.22E-07	2.81E-08	CONTRV1	50% Control on Road Dust			

Peak Day Concrete Trucks	--					
Peak Day Concrete Throughput (yd^3/day)	594	from Quantity Reassessment Spreadsheet				
	Cement	Aggregate	Sand	Supplement		
Concrete Proportions	12.7%	48.4%	37.0%	1.9%	AP-42 Section 11.12 (pp. 7)	
Material Throughputs (ton/day)	146	554	424	22		

-Approximately 20 gallons (166lb) of water was added to this solid material to produce 4024 lbs (one cubic yard) of concrete

Annual Factor: 0.14

I. Transfer Operations

	Controlled Total PM_{10} Emission Factor (lb/ton)	Material Throughput (ton/day)	Number of Transfers	PM_{10} Short-Term Emissions (g/s)	$PM_{2.5}$ Short-Term Emissions (g/s)	$PM_{2.5}$ Annual Emissions (g/s)
Aggregate[1]	0.0033	554	1	9.60E-03	1.45E-03	1.98E-04
Sand[1]	0.00099	424	1	2.20E-03	3.34E-04	4.56E-05
Cement[2]	0.00034	146	1	2.60E-04	4.68E-05	6.39E-06
Cement Supplement[2]	0.0049	22	1	5.58E-04	1.00E-04	1.37E-05
Weight Hopper	0.0028	978	1	1.44E-02	2.18E-03	2.97E-04
Truck Mix Loading[3]	0.0055	168	1	4.84E-03	8.70E-04	1.19E-04

-Emission Calculations from AP-42 Section 11.12 Emission Factors
-Assume Ready-Mix instead of Truck-Mix
[1]Transfers (truck to storage pile and front end loader to conveyor belt)
[2]Silo Emissions (uncontrolled)
[3]Uncontrolled

II. Storage Piles (Controlled)

	Wind Erosion Emission Factor (ton/acre/yr)	Pile Size (ft^2)	Pile Size (Acres)	PM_{10} Short-Term Emissions (g/s)	$PM_{2.5}$ Short-Term Emissions (g/s)	$PM_{2.5}$ Annual Emissions (g/s)	
Facililty Wind Erosion	0.38	38,780	0.890	1.82E-03	2.55E-04	3.49E-05	75% Control

$E_R = E_f$ (lb/hr per acre) * size of storage area (acres) * PM fraction * 453.5924 (g/lb) / 60 (min/hr) / 60 (s/min) * 50%
where:
E_R = PM_{10} emission rate in gram per second
E_f = total PM emission factor in lb/hr per acre from AP-42 Table 11.9-4, based on "exposed areas" for "overburden"
0.75 = PM_{10} fraction of total dust emissions obtained from Table 11.9-1
0.105 = $PM_{2.5}$ fraction of total dust emissions obtained from Table 11.9-1
75% = control factor

III. Unpaved Road Dust

	Average Vehicle Weight (Tons)	Total Distance Traveled (VMT/day)	Emission Factor (lb/VMT)	PM_{10} Emissions (g/s)	$PM_{2.5}$ Emissions (g/s)		
24-hour	28	2.2	0.048	2.79E-04	2.79E-05	50% Control	
Annual	28	2.0	0.048	2.51E-04	2.51E-05	50% Control	

$E_R = E_f$ (lb/VMT) * Distance Traveled (VMT/day) * 453.5924 (g/lb) / 60 (min/hr) / 60 (s/min) * 50%
where:
E_f = size-specific emission factor (lb/VMT) calculated from $E_f = k\,(s/12)^a(W/3)^b$ AP-42 Section 13.2-2
s = surface material silt content (%) - 8.5% for construction sites from Table 13.2.2-1
W = mean vehicle weight (tons)
k, a, b = empirical constants; $PM_{2.5}$ - 0.15, 0.9, 0.45; PM_{10} - 1.5, 0.9, 0.45
50% = control factor

	Peak Trips per Day	Annual Trips per Day	Avg. Truck Wt. (tons)	Roundtrip Travel Distance per Truck (ft)	(mi)
Trucks	59	53	28	200	0.038

-Assumes roundtrip travel distance onsite to be 200ft per truck

IV. Engine Emissions

	Operating Hours/Day	PM_{10} Emission Factor (g/s)	PM_{25} Emission Factor (g/s)	PM_{10} Emissions (g/s)	$PM_{2.5}$ Emissions (g/s)
Short-Term					
Onsite Trucks (Idling)	5	3.02E-04	2.78E-04	6.19E-05	5.69E-05
Onsite Trucks (Cruising)		2.08E-01	1.61E-01	8.19E-07	6.34E-07
Front End Loaders	2	4.41E-04	4.28E-04	3.68E-05	3.56E-05
Total				9.94E-05	9.32E-05
Annual					
Onsite Trucks (Idling)	4	3.02E-04	2.78E-04	5.56E-05	5.11E-05
Onsite Trucks (Cruising)		2.08E-01	1.61E-01	7.36E-07	5.70E-07
Front End Loaders	2	4.41E-04	4.28E-04	3.68E-05	3.56E-05
Total					8.73E-05

-Assumes 5 minute idling for onsite trucks

Equipment by Task

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
West Shaft (Shaft 5B Site)																																								
Site Preparation																																								
Site Preparation Stage 1							1																																
						2	2																																	
	Pickup Truck	Ford F-150	365	No	Above Ground	20%	20%																																	
						100%	100%																																	
						1	1																																	
	Rack Truck	Ford F-350 W/Whitney Racks	385	No	Above Ground	20%	20%																																	
						100%	100%																																	
						2	2																																	
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground	75%	75%																																	
						50%	50%																																	
						1	1																																	
	30 Yard Dump Truck	Kenworth W900B	475	No	Above Ground	75%	75%																																	
						50%	50%																																	
						1	1																																	
	Boom Truck	Terex BT5092	300	No	Above Ground	20%	20%																																	
						25%	25%																																	
						1	1																																	
	Bulldozer	Caterpillar D8T	310	No	Above Ground	75%	75%																																	
						50%	50%																																	
						1	1																																	
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground	75%	75%																																	
						100%	100%																																	
						1	1																																	
	Front End Loader	Caterpillar 950H	197	No	Above Ground	75%	75%																																	
						100%	100%																																	
						1	1																																	
	Grader	John Deere 770 G/GP	245	No	Above Ground	50%	50%																																	
						50%	50%																																	
						1	1																																	
	Roller	Caterpillar CB34 XW	46	No	Above Ground	50%	50%																																	
						50%	50%																																	
						1	1																																	
	Compressor	Sullair 750H	275	No	Above Ground	50%	50%																																	
						50%	50%																																	
						1	1																																	
	Generator	Caterpillar XQ45	96	No	Above Ground	80%	80%																																	
						50%	50%																																	
						1	1																																	
	Log Hauler	Kenworth 900B W/Log Hauler	500	No	Above Ground	60%	60%																																	
						25%	25%																																	
						2	2																																	
	Harvester	John Deere 759H	247	No	Above Ground	60%	60%																																	
						50%	50%																																	
						2	2																																	
	Tracked Swing Loader	John Deere 2954D	188	No	Above Ground	50%	50%																																	
						50%	50%																																	
						2	2																																	
	Chipper	Vermeer WC2300	440	No	Above Ground	50%	50%																																	
						50%	50%																																	
						1	1																																	
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300	No	Above Ground	10%	10%																																	
						10%	10%																																	
Site Preparation Stage 2																																								
								2	2																															
	Pickup Truck	Ford F-150	365	No	Above Ground			20%	20%																															
								100%	100%																															
								1	1																															
	Flat Truck	Ford F-650	250	No	Above Ground			20%	20%																															
								100%	100%																															
								1	1																															
	Rack Truck	Ford F-350 W/Whitney Racks	385	No	Above Ground			20%	20%																															
								100%	100%																															
								4	4																															
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground			75%	75%																															
								50%	50%																															
								1	1																															
	30 Yard Dump Truck	Kenworth W900B	475	No	Above Ground			75%	75%																															
								50%	50%																															
								1	1																															
	Excavator	John Deere 450D LC	348	No	Above Ground			75%	75%																															
								75%	75%																															
								1	1																															
	Roller	Caterpillar CB34 XW	46	No	Above Ground			50%	50%																															
								25%	25%																															
								1	1																															
	Crane	Terex T750 Truck Crane	500	No	Above Ground			20%	20%																															
								10%	10%																															
								1	1																															
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	No	Above Ground			60%	60%																															
								10%	10%																															
								1	1																															
	Hydroseeder	FINN Model T120 Hydroseeder	35	No	Above Ground			60%	60%																															
								10%	10%																															
								1	1																															
	Compressor	Sullair 750H	275	No	Above Ground			50%	50%																															
								50%	50%																															
								1	1																															
	Generator	Caterpillar XQ45	96	No	Above Ground			80%	80%																															
								50%	50%																															
								1	1																															
	Log Hauler	Kenworth 900B W/Log Hauler	500	No	Above Ground			60%	60%																															
								25%	25%																															
								2	2																															
	Harvester	John Deere 759H	247	No	Above Ground			60%	60%																															
								50%	50%																															
								2	2																															
	Tracked Swing Loader	John Deere 2954D	188	No	Above Ground			50%	50%																															
								50%	50%																															
								2	2																															
	Chipper	Vermeer WC2300	440	No	Above Ground			50%	50%																															
								50%	50%																															
								1	1																															
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300	No	Above Ground			10%	10%																															
								10%	10%																															
Site Preparation Stage 3																																								
										2	2																													
	Pickup Truck	Ford F-150	365	No	Above Ground					20%	20%																													
										100%	100%																													
										2	2																													
	Flat Truck	Ford F-650	250	No	Above Ground					20%	20%																													
										100%	100%																													
										1	1																													
	Rack Truck	Ford F-350 W/Whitney Racks	385	No	Above Ground					20%	20%																													
										100%	100%																													
										4	4																													
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground					75%	75%																													
										75%	75%																													
										2	2																													
	30 Yard Dump Truck	Kenworth W900B	475	No	Above Ground					75%	75%																													
										50%	50%																													
										2	2																													
	Log Hauler	Kenworth 900B W/Log Hauler	500	No	Above Ground					60%	60%																													
										25%	25%																													
										1	1																													
	12 Yard Concrete Mixer	Peterbilt 365	455	No	Above Ground					20%	20%																													
										10%	10%																													
										2	2																													
	Asphalt Flow Boy	Flow Boy 3064	425	No	Above Ground					60%	60%																													
										10%	10%																													
										1	1																													

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
West Shaft (Shaft 5B Site)			
Site Preparation			
Site Preparation Stage 1			
	Pickup Truck	Ford F-150	365
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	Boom Truck	Terex BT5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Grader	John Deere 770 G/GP	245
	Roller	Caterpillar CB34 XW	46
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Log Hauler	Kenworth 900B W/Log Hauler	500
	Harvester	John Deere 759H	247
	Tracked Swing Loader	John Deere 2954D	188
	Chipper	Vermeer WC2300	440
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 2			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Excavator	John Deere 450D LC	348
	Roller	Caterpillar CB34 XW	46
	Crane	Terex T750 Truck Crane	500
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Hydroseeder	FINN Model T120 Hydroseeder	35
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Log Hauler	Kenworth 900B W/Log Hauler	500
	Harvester	John Deere 759H	247
	Tracked Swing Loader	John Deere 2954D	188
	Chipper	Vermeer WC2300	440
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 3			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	Log Hauler	Kenworth 900B W/Log Hauler	500
	12 Yard Concrete Mixer	Peterbilt 365	455
	Asphalt Flow Boy	Flow Boy 3064	425

2016												2017												2018											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
West Shaft (Shaft 5B Site)			
Site Preparation			
Site Preparation Stage 1			
	Pickup Truck	Ford F-150	365
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	Boom Truck	Terex BT5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Grader	John Deere 770 G/GP	245
	Roller	Caterpillar CB34 XW	46
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Log Hauler	Kenworth 900B W/Log Hauler	500
	Harvester	John Deere 759H	247
	Tracked Swing Loader	John Deere 2954D	188
	Chipper	Vermeer WC2300	440
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 2			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Excavator	John Deere 450D LC	348
	Roller	Caterpillar CB34 XW	46
	Crane	Terex T750 Truck Crane	500
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Hydroseeder	FINN Model T120 Hydroseeder	35
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Log Hauler	Kenworth 900B W/Log Hauler	500
	Harvester	John Deere 759H	247
	Tracked Swing Loader	John Deere 2954D	188
	Chipper	Vermeer WC2300	440
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 3			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	Log Hauler	Kenworth 900B W/Log Hauler	500
	12 Yard Concrete Mixer	Peterbilt 365	455
	Asphalt Flow Boy	Flow Boy 3064	425

2019												2020												2021											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21

Equipment by Task

																J	F	M	A	J	J																				
						2013												2014												2015											
						1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
	Water Tanker	Peterbilt 340	330	No	Above Ground					60% 50%	60% 50%																														
	Box Truck	Chevrolet Express 3500	325	No	Above Ground					1 10% 50%	1 10% 50%																														
	Boom Truck	Terex BT 5092	300	No	Above Ground					1 20% 25%	1 20% 25%																														
	Bulldozer	Caterpillar D8T	310	No	Above Ground					2 75% 100%	2 75% 100%																														
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground					2 75% 100%	2 75% 100%																														
	Front End Loader	Caterpillar 950H	197	No	Above Ground					2 75% 100%	2 75% 100%																														
	Excavator	John Deere 450D LC	348	No	Above Ground					2 75% 100%	2 75% 100%																														
	Grader	John Deere 770G/GP	245	No	Above Ground					1 50% 50%	1 50% 50%																														
	Crawler Dozer	JOhn Deere 770J	115	No	Above Ground					1 60% 50%	1 60% 50%																														
	Harvester	John Deere 759H	247	No	Above Ground					1 60% 50%	1 60% 50%																														
	Tracked Swing Loader	John Deere 2954D	188	No	Above Ground					1 50% 50%	1 50% 50%																														
	Chipper	Vermeer WC2300	440	No	Above Ground					2 50% 50%	2 50% 50%																														
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	No	Above Ground					1 75% 25%	1 75% 25%																														
	Rock Crusher	McCloskey MCB C50	350	No	Above Ground					1 50% 25%	1 50% 25%																														
	Rock Cutter	Vermeer T955	415	No	Above Ground					1 70% 25%	1 70% 25%																														
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	No	Above Ground					1 70% 10%	1 70% 10%																														
	Paver	Caterpillar AP-1000D	224	No	Above Ground					1 60% 10%	1 60% 10%																														
	Roller	Caterpillar CB34 XW	46	No	Above Ground					1 50% 10%	1 50% 10%																														
	Crane	Terex T750 Truck Crane	500	No	Above Ground					1 20% 25%	1 20% 25%																														
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	No	Above Ground					1 60% 10%	1 60% 10%																														
	Hydroseeder	Finn Model T120 Hydroseeder	35	No	Above Ground					1 60% 10%	1 60% 10%																														
	Compressor	Sullair 750H	275	No	Above Ground					1 50% 50%	1 50% 50%																														
	Generator	Caterpillar XQ45	96	No	Above Ground					1 80% 50%	1 80% 50%																														
	Pump	Honda WT40X	11	No	Above Ground					1 50% 10%	1 50% 10%																														
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300	No	Above Ground					1 10% 10%	1 10% 10%																														
Site Preparation Stage 4																																									
	Pickup Truck	Ford F-150	365	No	Above Ground							2 20% 100%	2 20% 100%																												
	Flat Truck	Ford F-650	250	No	Above Ground							1 20% 100%	1 20% 100%																												
	Rack Truck	Ford F-350 W/Whitney Racks	385	No	Above Ground							1 20% 100%	1 20% 100%																												
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground							4 75% 50%	4 75% 50%																												
	30 Yard Dump Truck	Kenworth W900B	475	No	Above Ground							2 75% 50%	2 75% 50%																												
	12 Yard Concrete Mixer	Peterbilt 365	455	No	Above Ground							1 20% 10%	1 20% 10%																												
	Asphalt Flow Boy	Flow Boy 3064	425	No	Above Ground							1 60% 10%	1 60% 10%																												
	Water Tanker	Peterbilt 340	330	No	Above Ground							1 60% 50%	1 60% 50%																												
	Box Truck	Chevrolet Express 3500	325	No	Above Ground							1 10% 50%	1 10% 50%																												
	Boom Truck	Terex BT 5092	300	No	Above Ground							1 20% 100%	1 20% 100%																												
	Bulldozer	Caterpillar D8T	310	No	Above Ground							1 75% 25%	1 75% 25%																												
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground							1 75% 100%	1 75% 100%																												
	Front End Loader	Caterpillar 950H	197	No	Above Ground							2 75% 100%	2 75% 100%																												
	Excavator	John Deere 450D LC	348	No	Above Ground							1 75% 50%	1 75% 50%																												
	Grader	John Deere 770G/GP	245	No	Above Ground							1 50% 50%	1 50% 50%																												
	Crawler Dozer	JOhn Deere 770J	115	No	Above Ground							1 60% 25%	1 60% 25%																												
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	No	Above Ground							1 75% 50%	1 75% 50%																												
	Rock Crusher	McCloskey MCB C50	350	No	Above Ground							1 50% 50%	1 50% 50%																												
	Rock Cutter	Vermeer T955	415	No	Above Ground							1 70% 50%	1 70% 50%																												
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	No	Above Ground							1 70% 10%	1 70% 10%																												
	Paver	Caterpillar AP-1000D	224	No	Above Ground							1 50% 10%	1 50% 10%																												
	Roller	Caterpillar CB34 XW	46	No	Above Ground							1 50% 10%	1 50% 10%																												
												1	1																												

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Water Tanker	Peterbilt 340	330
	Box Truck	Chevrolet Express 3500	325
	Boom Truck	Terex BT 5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Excavator	John Deere 450D LC	348
	Grader	John Deere 770G/GP	245
	Crawler Dozer	JOhn Deere 770J	115
	Harvester	John Deere 759H	247
	Tracked Swing Loader	John Deere 2954D	188
	Chipper	Vermeer WC2300	440
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348
	Rock Crusher	McCloskey MCB C50	350
	Rock Cutter	Vermeer T955	415
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46
	Crane	Terex T750 Truck Crane	500
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Hydroseeder	Finn Model T120 Hydroseeder	35
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Pump	Honda WT40X	11
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 4			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	12 Yard Concrete Mixer	Peterbilt 365	455
	Asphalt Flow Boy	Flow Boy 3064	425
	Water Tanker	Peterbilt 340	330
	Box Truck	Chevrolet Express 3500	325
	Boom Truck	Terex BT 5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Excavator	John Deere 450D LC	348
	Grader	John Deere 770G/GP	245
	Crawler Dozer	JOhn Deere 770J	115
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348
	Rock Crusher	McCloskey MCB C50	350
	Rock Cutter	Vermeer T955	415
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46

	2016												2017												2018											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Water Tanker	Peterbilt 340	330
	Box Truck	Chevrolet Express 3500	325
	Boom Truck	Terex BT 5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Excavator	John Deere 450D LC	348
	Grader	John Deere 770G/GP	245
	Crawler Dozer	JOhn Deere 770J	115
	Harvester	John Deere 759H	247
	Tracked Swing Loader	John Deere 2954D	188
	Chipper	Vermeer WC2300	440
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348
	Rock Crusher	McCloskey MCB C50	350
	Rock Cutter	Vermeer T955	415
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46
	Crane	Terex T750 Truck Crane	500
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Hydroseeder	Finn Model T120 Hydroseeder	35
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Pump	Honda WT40X	11
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 4			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	12 Yard Concrete Mixer	Peterbilt 365	455
	Asphalt Flow Boy	Flow Boy 3064	425
	Water Tanker	Peterbilt 340	330
	Box Truck	Chevrolet Express 3500	325
	Boom Truck	Terex BT 5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Excavator	John Deere 450D LC	348
	Grader	John Deere 770G/GP	245
	Crawler Dozer	JOhn Deere 770J	115
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348
	Rock Crusher	McCloskey MCB C50	350
	Rock Cutter	Vermeer T955	415
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46

2019												2020												2021											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
	Crane	Terex T750 Truck Crane	500	No	Above Ground							20%	20%																											
												10%	10%																											
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	No	Above Ground							1	1																											
												60%	60%																											
	Hydroseeder	Finn Model T120 Hydroseeder	35	No	Above Ground							10%	10%																											
												1	1																											
	Compressor	Sullair 750H	275	No	Above Ground							60%	60%																											
												25%	25%																											
	Generator	Caterpillar XQ45	96	No	Above Ground							1	1																											
												50%	50%																											
	Pump	Honda WT40X	11	No	Above Ground							50%	50%																											
												10%	10%																											
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300	No	Above Ground							1	1																											
												10%	10%																											
												10%	10%																											
Site Preparation Stage 5																																								
	Pickup Truck	Ford F-150	365	No	Above Ground									1	1																									
														20%	20%																									
														100%	100%																									
	Flat Truck	Ford F-650	250	No	Above Ground									1	1																									
														20%	20%																									
														100%	100%																									
	Rack Truck	Ford F-350 W/Whitney Racks	385	No	Above Ground									1	1																									
														20%	20%																									
														100%	100%																									
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground									1	1																									
														75%	75%																									
														50%	50%																									
	30 Yard Dump Truck	Kenworth W900B	475	No	Above Ground									1	1																									
														75%	75%																									
														50%	50%																									
	12 Yard Concrete Mixer	Peterbilt 365	455	No	Above Ground									1	1																									
														20%	20%																									
														10%	10%																									
	Asphalt Flow Boy	Flow Boy 3064	425	No	Above Ground									1	1																									
														60%	60%																									
														10%	10%																									
	Water Tanker	Peterbilt 340	330	No	Above Ground									1	1																									
														60%	60%																									
														50%	50%																									
	Box Truck	Chevrolet Express 3500	325	No	Above Ground									1	1																									
														10%	10%																									
														25%	25%																									
	Boom Truck	Terex BT 5092	300	No	Above Ground									1	1																									
														20%	20%																									
														25%	25%																									
	Bulldozer	Caterpillar D8T	310	No	Above Ground									1	1																									
														75%	75%																									
														25%	25%																									
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground									1	1																									
														75%	75%																									
														100%	100%																									
	Front End Loader	Caterpillar 950H	197	No	Above Ground									1	1																									
														75%	75%																									
														100%	100%																									
	Excavator	John Deere 450D LC	348	No	Above Ground									1	1																									
														75%	75%																									
														50%	50%																									
	Grader	John Deere 770G/GP	245	No	Above Ground									1	1																									
														50%	50%																									
														25%	25%																									
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	No	Above Ground									1	1																									
														75%	75%																									
														50%	50%																									
	Rock Crusher	McCloskey MCB C50	350	No	Above Ground									1	1																									
														50%	50%																									
														50%	50%																									
	Rock Cutter	Vermeer T955	415	No	Above Ground									1	1																									
														70%	70%																									
														50%	50%																									
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	No	Above Ground									1	1																									
														70%	70%																									
														10%	10%																									
	Paver	Caterpillar AP-1000D	224	No	Above Ground									1	1																									
														50%	50%																									
														10%	10%																									
	Roller	Caterpillar CB34 XW	46	No	Above Ground									1	1																									
														50%	50%																									
														10%	10%																									
	Crane	Terex T750 Truck Crane	500	No	Above Ground									1	1																									
														20%	20%																									
														10%	10%																									
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	No	Above Ground									1	1																									
														60%	60%																									
														10%	10%																									
	Hydroseeder	Finn Model T120 Hydroseeder	35	No	Above Ground									1	1																									
														60%	60%																									
														25%	25%																									
	Compressor	Sullair 750H	275	No	Above Ground									1	1																									
														50%	50%																									
														50%	50%																									
	Generator	Caterpillar XQ45	96	No	Above Ground									1	1																									
														80%	80%																									
														50%	50%																									
	Pump	Honda WT40X	11	No	Above Ground									1	1																									
														50%	50%																									
														10%	10%																									
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300	No	Above Ground									1	1																									
														10%	10%																									
														10%	10%																									
Site Preparation Stage 6																																								
	Pickup Truck	Ford F-150	365	No	Above Ground											1	1																									
																20%	20%																									
																100%	100%																									
	Flat Truck	Ford F-650	250	No	Above Ground											1	1																									
																20%	20%																									
																100%	100%																									
	Rack Truck	Ford F-350 W/Whitney Racks	385	No	Above Ground											1	1																									
																20%	20%																									
																100%	100%																									
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground											1	1																									
																75%	75%																									
																50%	50%																									
	30 Yard Dump Truck	Kenworth W900B	475	No	Above Ground											1	1																									
																75%	75%																									
																50%	50%																									
	12 Yard Concrete Mixer	Peterbilt 365	455	No	Above Ground											1	1																									
																20%	20%																									
																10%	10%																									
	Asphalt Flow Boy	Flow Boy 3064	425	No	Above Ground											1	1																									
																60%	60%																									
																10%	10%																									
	Water Tanker	Peterbilt 340	330	No	Above Ground											1	1																									
																60%	60%																									
																50%	50%																									
	Box Truck	Chevrolet Express 3500	325	No	Above Ground											1	1																									
																10%	10%																									
																25%	25%																									
	Boom Truck	Terex BT 5092	300	No	Above Ground											1	1																									
																20%	20%																									
																25%	25%																									
	Bulldozer	Caterpillar D8T	310	No	Above Ground											1	1																									
																75%	75%																									
																25%	25%																									
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground											1	1																									
																75%	75%																									
																100%	100%																									

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Crane	Terex T750 Truck Crane	500
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Hydroseeder	Finn Model T120 Hydroseeder	35
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Pump	Honda WT40X	11
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 5			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	12 Yard Concrete Mixer	Peterbilt 365	455
	Asphalt Flow Boy	Flow Boy 3064	425
	Water Tanker	Peterbilt 340	330
	Box Truck	Chevrolet Express 3500	325
	Boom Truck	Terex BT 5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348
	Rock Crusher	McCloskey MCB C50	350
	Rock Cutter	Vermeer T955	415
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46
	Crane	Terex T750 Truck Crane	500
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Hydroseeder	Finn Model T120 Hydroseeder	35
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Pump	Honda WT40X	11
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 6			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	12 Yard Concrete Mixer	Peterbilt 365	455
	Asphalt Flow Boy	Flow Boy 3064	425
	Water Tanker	Peterbilt 340	330
	Box Truck	Chevrolet Express 3500	325
	Boom Truck	Terex BT 5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124

2016												2017												2018											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
				2019												2020												2021											
	Crane	Terex T750 Truck Crane	500																																				
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200																																				
	Hydroseeder	Finn Model T120 Hydroseeder	35																																				
	Compressor	Sullair 750H	275																																				
	Generator	Caterpillar XQ45	96																																				
	Pump	Honda WT40X	11																																				
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300																																				
Site Preparation Stage 5																																							
	Pickup Truck	Ford F-150	365																																				
	Flat Truck	Ford F-650	250																																				
	Rack Truck	Ford F-350 W/Whitney Racks	385																																				
	20 Yard Dump Truck	Kenworth T800	525																																				
	30 Yard Dump Truck	Kenworth W900B	475																																				
	12 Yard Concrete Mixer	Peterbilt 365	455																																				
	Asphalt Flow Boy	Flow Boy 3064	425																																				
	Water Tanker	Peterbilt 340	330																																				
	Box Truck	Chevrolet Express 3500	325																																				
	Boom Truck	Terex BT 5092	300																																				
	Bulldozer	Caterpillar D8T	310																																				
	Standard Backhoe	Caterpillar 450E	124																																				
	Front End Loader	Caterpillar 950H	197																																				
	Excavator	John Deere 450D LC	348																																				
	Grader	John Deere 770G/GP	245																																				
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348																																				
	Rock Crusher	McCloskey MCB C50	350																																				
	Rock Cutter	Vermeer T955	415																																				
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348																																				
	Paver	Caterpillar AP-1000D	224																																				
	Roller	Caterpillar CB34 XW	46																																				
	Crane	Terex T750 Truck Crane	500																																				
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200																																				
	Hydroseeder	Finn Model T120 Hydroseeder	35																																				
	Compressor	Sullair 750H	275																																				
	Generator	Caterpillar XQ45	96																																				
	Pump	Honda WT40X	11																																				
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300																																				
Site Preparation Stage 6																																							
	Pickup Truck	Ford F-150	365																																				
	Flat Truck	Ford F-650	250																																				
	Rack Truck	Ford F-350 W/Whitney Racks	385																																				
	20 Yard Dump Truck	Kenworth T800	525																																				
	30 Yard Dump Truck	Kenworth W900B	475																																				
	12 Yard Concrete Mixer	Peterbilt 365	455																																				
	Asphalt Flow Boy	Flow Boy 3064	425																																				
	Water Tanker	Peterbilt 340	330																																				
	Box Truck	Chevrolet Express 3500	325																																				
	Boom Truck	Terex BT 5092	300																																				
	Bulldozer	Caterpillar D8T	310																																				
	Standard Backhoe	Caterpillar 450E	124																																				

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
						J	F	M	A	J	J																														
						2013												2014												2015											
						1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Front End Loader	Caterpillar 950H	197	No	Above Ground											1	1																								
																75%	75%																								
																100%	100%																								
	Excavator	John Deere 450D LC	348	No	Above Ground											1	1																								
																75%	75%																								
																50%	50%																								
	Grader	John Deere 770G/GP	245	No	Above Ground											1	1																								
																50%	50%																								
																25%	25%																								
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348	No	Above Ground											1	1																								
																75%	75%																								
																50%	50%																								
	Rock Crusher	McCloskey MCB C50	350	No	Above Ground											1	1																								
																50%	50%																								
																50%	50%																								
	Rock Cutter	Vermeer T955	415	No	Above Ground											1	1																								
																70%	70%																								
																50%	50%																								
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348	No	Above Ground											1	1																								
																70%	70%																								
																10%	10%																								
	Paver	Caterpillar AP-1000D	224	No	Above Ground											1	1																								
																50%	50%																								
																10%	10%																								
	Roller	Caterpillar CB34 XW	46	No	Above Ground											1	1																								
																50%	50%																								
																10%	10%																								
	Crane	Terex T750 Truck Crane	500	No	Above Ground											1	1																								
																20%	20%																								
																10%	10%																								
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	No	Above Ground											1	1																								
																60%	60%																								
																10%	10%																								
	Hydroseeder	Finn Model T120 Hydroseeder	35	No	Above Ground											1	1																								
																60%	60%																								
																25%	25%																								
	Compressor	Sullair 750H	275	No	Above Ground											1	1																								
																50%	50%																								
																50%	50%																								
	Generator	Caterpillar XQ45	96	No	Above Ground											1	1																								
																80%	80%																								
																50%	50%																								
	Pickup Truck	Ford F-150	365	No	Above Ground													1	1																						
																		20%	20%																						
																		100%	100%																						
	Flat Truck	Ford F-650	250	No	Above Ground													1	1																						
																		20%	20%																						
																		100%	100%																						
	Rack Truck	Ford F-350 W/Whitney Racks	385	No	Above Ground													1	1																						
																		20%	20%																						
																		100%	100%																						
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground													1	1																						
																		75%	75%																						
																		25%	25%																						
	30 Yard Dump Truck	Kenworth W900B	475	No	Above Ground													1	1																						
																		75%	75%																						
																		25%	25%																						
	12 Yard Concrete Mixer	Peterbilt 365	455	No	Above Ground													1	1																						
																		20%	20%																						
																		25%	25%																						
	Asphalt Flow Boy	Flow Boy 3064	425	No	Above Ground													1	1																						
																		60%	60%																						
																		10%	10%																						
	Water Tanker	Peterbilt 340	330	No	Above Ground													1	1																						
																		60%	60%																						
																		25%	25%																						
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300	No	Above Ground													1	1																						
																		10%	10%																						
																		10%	10%																						
	Cement Tanker	CSC Bulk Cement Trans DFL 1311Aq	300	No	Above Ground													1	1																						
																		10%	10%																						
																		10%	10%																						
	Semi-Trailer Truck	Freightliner CA113DC	450	No	Above Ground													1	1																						
																		10%	10%																						
																		10%	10%																						
	Trailer Truck	Freightliner Classic XL	455	No	Above Ground													1	1																						
																		10%	10%																						
																		10%	10%																						
	Box Truck	Chevrolet Express 3500	325	No	Above Ground													1	1																						
																		10%	10%																						
																		25%	25%																						
	Boom Truck	Terex BT 5092	300	No	Above Ground													1	1																						
																		20%	20%																						
																		25%	25%																						
	Bulldozer	Caterpillar D8T	310	No	Above Ground													1	1																						
																		75%	75%																						
																		25%	25%																						
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground													1	1																						
																		75%	75%																						
																		100%	100%																						
	Front End Loader	Caterpillar 950H	197	No	Above Ground													1	1																						
																		75%	75%																						
																		100%	100%																						
	Excavator	John Deere 450D LC	348	No	Above Ground													1	1																						
																		75%	75%																						
																		25%	25%																						
	Grader	John Deere 770G/GP	245	No	Above Ground													1	1																						
																		50%	50%																						
																		10%	10%																						
	Paver	Caterpillar AP-1000D	46	No	Above Ground													1	1																						
																		50%	50%																						
																		10%	10%																						
	Roller	Caterpillar CB34 XW	224	No	Above Ground													1	1																						
																		50%	50%																						
																		10%	10%																						
	Crane	Terex T750 Truck Crane	46	No	Above Ground													1	1																						
																		20%	20%																						
																		10%	10%																						
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200	No	Above Ground													1	1																						
																		60%	60%																						
																		10%	10%																						
	Pile Driver	ABI Excavator Mounted Driver Model HVR 75	200	No	Above Ground													1	1																						
																		50%	50%																						
																		10%	10%																						
	Compressor	Sullair 750H	275	No	Above Ground													1	1																						
																		50%	50%																						
																		50%	50%																						
	Generator	Caterpillar XQ45	96	No	Above Ground													1	1																						
																		80%	80%																						
																		50%	50%																						
Shaft 5B Construction																																								
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)																																								
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground													1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
																		10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
																		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	Shotcrete Pump	Putzmeister TK 60 HP	131	No	Above Ground													1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
																		25%	25%	25%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
																		25%	25%	25%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
	Ventilation System	Not Estimated At This Time		No	Above Ground														1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
																			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
																			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Compressors	Sullair 750H	275	No	Above Ground													2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
																		20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
																		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
				2016												2017												2018											
	Front End Loader	Caterpillar 950H	197																																				
	Excavator	John Deere 450D LC	348																																				
	Grader	John Deere 770G/GP	245																																				
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348																																				
	Rock Crusher	McCloskey MCB C50	350																																				
	Rock Cutter	Vermeer T955	415																																				
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348																																				
	Paver	Caterpillar AP-1000D	224																																				
	Roller	Caterpillar CB34 XW	46																																				
	Crane	Terex T750 Truck Crane	500																																				
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200																																				
	Hydroseeder	Finn Model T120 Hydroseeder	35																																				
	Compressor	Sullair 750H	275																																				
	Generator	Caterpillar XQ45	96																																				
	Pump	Honda WT40X	11																																				
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300																																				
Site Preparation Stage 7																																							
	Pickup Truck	Ford F-150	365																																				
	Flat Truck	Ford F-650	250																																				
	Rack Truck	Ford F-350 W/Whitney Racks	385																																				
	20 Yard Dump Truck	Kenworth T800	525																																				
	30 Yard Dump Truck	Kenworth W900B	475																																				
	12 Yard Concrete Mixer	Peterbilt 365	455																																				
	Asphalt Flow Boy	Flow Boy 3064	425																																				
	Water Tanker	Peterbilt 340	330																																				
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300																																				
	Cement Tanker	CSC Bulk Cement Trans DFL 1311Aq	300																																				
	Semi-Trailer Truck	Freightliner CA113DC	450																																				
	Trailer Truck	Freightliner Classic XL	455																																				
	Box Truck	Chevrolet Express 3500	325																																				
	Boom Truck	Terex BT 5092	300																																				
	Bulldozer	Caterpillar D8T	310																																				
	Standard Backhoe	Caterpillar 450E	124																																				
	Front End Loader	Caterpillar 950H	197																																				
	Excavator	John Deere 450D LC	348																																				
	Grader	John Deere 770G/GP	245																																				
	Paver	Caterpillar AP-1000D	46																																				
	Roller	Caterpillar CB34 XW	224																																				
	Crane	Terex T750 Truck Crane	46																																				
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200																																				
	Pile Driver	ABI Excavator Mounted Driver Model HVR 75	200																																				
	Compressor	Sullair 750H	275																																				
	Generator	Caterpillar XQ45	96																																				
Shaft 5B Construction																																							
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)																																							
	Shaft Crane	LTM 1200-5.1	496																																				
	Shotcrete Pump	Putzmeister TK 60 HP	131																																				
	Ventilation System	Not Estimated At This Time																																					
	Compressors	Sullair 750H	275																																				

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Front End Loader	Caterpillar 950H	197
	Excavator	John Deere 450D LC	348
	Grader	John Deere 770G/GP	245
	Rock Breaker/Excavator	BTI BXR Hydraulic Breaker/John Deere 450D LC	348
	Rock Crusher	McCloskey MCB C50	350
	Rock Cutter	Vermeer T955	415
	Rock Drill/Excavator	TEI HEM Excvator Drill/John Deere 450D LC	348
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46
	Crane	Terex T750 Truck Crane	500
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Hydroseeder	Finn Model T120 Hydroseeder	35
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
	Pump	Honda WT40X	11
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
Site Preparation Stage 7			
	Pickup Truck	Ford F-150	365
	Flat Truck	Ford F-650	250
	Rack Truck	Ford F-350 W/Whitney Racks	385
	20 Yard Dump Truck	Kenworth T800	525
	30 Yard Dump Truck	Kenworth W900B	475
	12 Yard Concrete Mixer	Peterbilt 365	455
	Asphalt Flow Boy	Flow Boy 3064	425
	Water Tanker	Peterbilt 340	330
	Fuel Tanker	Kenworth T-370, Paccar PX-8	300
	Cement Tanker	CSC Bulk Cement Trans DFL 1311Aq	300
	Semi-Trailer Truck	Freightliner CA113DC	450
	Trailer Truck	Freightliner Classic XL	455
	Box Truck	Chevrolet Express 3500	325
	Boom Truck	Terex BT 5092	300
	Bulldozer	Caterpillar D8T	310
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	Excavator	John Deere 450D LC	348
	Grader	John Deere 770G/GP	245
	Paver	Caterpillar AP-1000D	46
	Roller	Caterpillar CB34 XW	224
	Crane	Terex T750 Truck Crane	46
	Vibratory Sheeting Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Pile Driver	ABI Excavator Mounted Driver Model HVR 75	200
	Compressor	Sullair 750H	275
	Generator	Caterpillar XQ45	96
Shaft 5B Construction			
Excavation, Initial support, shaft lining in rock & bellout (includes general deliveries)			
	Shaft Crane	LTM 1200-5.1	496
	Shotcrete Pump	Putzmeister TK 60 HP	131
	Ventilation System	Not Estimated At This Time	
	Compressors	Sullair 750H	275

2019												2020												2021											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT8513	300	No	Above Ground
	Fuel Truck	Freightliner FL-80	300	No	Above Ground
	Potable Water Truck	Freightliner FL-80	300	No	Above Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Pump	Tsurumi TE3-100HA	8	No	Above Ground
	Hydraulic Winches	Ingersoll Rand LC2H500Q	??	No	Above Ground
	PB Winch	Timberland E780 General Purpose Winch	??	No	Above Ground
	Drill Jumbos	Sandvik DD530	228	No	Above Ground
	Fork Lift	Caterpillar P20000	148	No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
Inundation Plug					
Inundation Plug Construction - Plug Hole Construction (With BOP)					
	Drill Rigs - Pilot HOles	Schramm T130XD	760	Yes	Above Ground
Inundation Plug Construction - Pump Shaft Construction					
	Drill Rigs - Pilot HOles	Schramm T130XD	760	Yes	Above Ground
5B Starter Tunnel					
Excavation & Installation of Initial Support					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Welder (Plant)	Not Estimated At This Time		No	Above Ground
	Generators	Terex T360	426	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40	Yes	Above Ground
	Shotcrete Delivery Plant	Not Estimated At This Time		Yes	Above Ground
	Drill Jumbo	Sandvik DT920i	241	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
Shaft 5B Connector Tunnel					
Excavation & Installation of Initial Support					
	Compressors	Sullair 750H	275	No	Below Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
Bypass Tunnel Driving (TBM)					
(TBM Tunneling) Mobilization Surface Works					
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
(TBM Tunneling) Erect TBM Underground					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	TBM Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Above Ground
	Welder (Plant)	Not Estimated At This Time		No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Freightliner FL-80	300	No	Above Ground
	Potable Water Truck	Freightliner FL-80	300	No	Above Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
(TBM Tunneling) Tunnel Excavation and Lining					

	2013												2014												2015											
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	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
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Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	2016 Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	2017 Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	2018 Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Concrete Truck	2003 STERLING LT8513	300																																				
	Fuel Truck	Freightliner FL-80	300																																				
	Potable Water Truck	Freightliner FL-80	300																																				
	Loaders	Caterpillar 950H	197																																				
	Concrete Pumps	Putzmeister TK 60 HP	131																																				
	Pump	Tsurumi TE3-100HA	8																																				
	Hydraulic Winches	Ingersoll Rand LC2H500Q	??																																				
	PB Winch	Timberland E780 General Purpose Winch	??																																				
	Drill Jumbos	Sandvik DD530	228																																				
	Fork Lift	Caterpillar P20000	148																																				
	Excavator	Liebherr R 934 C Litronic	195																																				
Inundation Plug																																							
Inundation Plug Construction - Plug Hole Construction (With BOP)																																							
	Drill Rigs - Pilot HOles	Schramm T130XD	760	3 83% 70%	3 83% 70%	3 83% 70%	3 83% 70%	3 83% 70%	3 83% 70%	3 83% 70%	3 83% 70%																												
Inundation Plug Construction - Pump Shaft Construction																																							
	Drill Rigs - Pilot HOles	Schramm T130XD	760																																				
5B Starter Tunnel																																							
Excavation & Installation of Initial Support																																							
	Shaft Crane	LTM 1200-5.1	496																																				
	Compressors	Sullair 750H	275																																				
	Welder (Plant)	Not Estimated At This Time																																					
	Generators	Terex T360	426																																				
	Loaders	Caterpillar 950H	197																																				
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40																																				
	Shotcrete Delivery Plant	Not Estimated At This Time																																					
	Drill Jumbo	Sandvik DT920i	241																																				
	Excavator	Liebherr R 934 C Litronic	195																																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Fuel Truck	Not Estimated At This Time	300																																				
	Potable Water Truck	Not Estimated At This Time	300																																				
	Ventilation System	Not Estimated At This Time																																					
	Concrete Pumps	Putzmeister TK 60 HP	131																																				
Shaft 5B Connector Tunnel																																							
Excavation & Installation of Initial Support																																							
	Compressors	Sullair 750H	275																																				
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Fuel Truck	Not Estimated At This Time	300																																				
Bypass Tunnel Driving (TBM)																																							
(TBM Tunneling) Mobilization Surface Works																																							
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Shaft Crane	LTM 1200-5.1	496																																				
(TBM Tunneling) Erect TBM Underground																																							
	Shaft Crane	LTM 1200-5.1	496																																				
	TBM Crane	LTM 1200-5.1	496																																				
	Compressors	Sullair 750H	275																																				
	Welder (Plant)	Not Estimated At This Time																																					
	Excavator	Liebherr R 934 C Litronic	195																																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Fuel Truck	Freightliner FL-80	300																																				
	Potable Water Truck	Freightliner FL-80	300																																				
	Ventilation System	Not Estimated At This Time																																					
(TBM Tunneling) Tunnel Excavation and Lining																																							

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT8513	300
	Fuel Truck	Freightliner FL-80	300
	Potable Water Truck	Freightliner FL-80	300
	Loaders	Caterpillar 950H	197
	Concrete Pumps	Putzmeister TK 60 HP	131
	Pump	Tsurumi TE3-100HA	8
	Hydraulic Winches	Ingersoll Rand LC2H500Q	??
	PB Winch	Timberland E780 General Purpose Winch	??
	Drill Jumbos	Sandvik DD530	228
	Fork Lift	Caterpillar P20000	148
	Excavator	Liebherr R 934 C Litronic	195
Inundation Plug			
Inundation Plug Construction - Plug Hole Construction (With BOP)			
	Drill Rigs - Pilot HOles	Schramm T130XD	760
Inundation Plug Construction - Pump Shaft Construction			
	Drill Rigs - Pilot HOles	Schramm T130XD	760
5B Starter Tunnel			
Excavation & Installation of Initial Support			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Welder (Plant)	Not Estimated At This Time	
	Generators	Terex T360	426
	Loaders	Caterpillar 950H	197
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40
	Shotcrete Delivery Plant	Not Estimated At This Time	
	Drill Jumbo	Sandvik DT920i	241
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
	Ventilation System	Not Estimated At This Time	
	Concrete Pumps	Putzmeister TK 60 HP	131
Shaft 5B Connector Tunnel			
Excavation & Installation of Initial Support			
	Compressors	Sullair 750H	275
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
Bypass Tunnel Driving (TBM)			
(TBM Tunneling) Mobilization Surface Works			
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Shaft Crane	LTM 1200-5.1	496
(TBM Tunneling) Erect TBM Underground			
	Shaft Crane	LTM 1200-5.1	496
	TBM Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Welder (Plant)	Not Estimated At This Time	
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Fuel Truck	Freightliner FL-80	300
	Potable Water Truck	Freightliner FL-80	300
	Ventilation System	Not Estimated At This Time	
(TBM Tunneling) Tunnel Excavation and Lining			

2019												2020												2021											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location
	TBM	Not Estimated At This Time		Yes	Below Ground
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	50T Crane	LTM 1050-3.1	367	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Ventilation System	Not Estimated At This Time		No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Pump	Tsurumi TE3-100HA	8	No	Below Ground
	Grout Batch Plant	Chemgrout CG500/3x8/H	??	Yes	Above Ground
	Fork Lift	Caterpillar P20000	148	No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
(TBM Tunneling) Tunnel Clean Up					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Bobcat	S160 Skid Steer Loader	61	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of Final Liner					
Installation of Steel Liner					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Grout Mixers	Chemgrout CGMIX128/E	Electric	Yes	Above Ground
	Grout Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Welding Machine	Not Estimated At This Time		No	Above Ground
	Tunnel Pipe Transporter	Not Estimated At This Time	400	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of CIP against Steel Liner					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground

	2013												2014												2015											
	J	F	M	A	J	J																														
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
																																		1	1	1
																																		70%	70%	70%
																																		30%	30%	30%
																																		3	3	3
																																		50%	50%	50%
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																																		1	1	1
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																																		1	1	1
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																																		2	2	2
																																		10%	10%	10%
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																																		10%	10%	10%
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																																		100%	100%	100%
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																																		1	1	1
																																		10%	10%	10%
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																																		2	2	2
																																		40%	40%	40%
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																																		1	1	1
																																		20%	20%	20%
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																																		2	2	2
																																		10%	10%	10%
																																		5%	5%	5%
																																		1	1	1
																																		10%	10%	10%
																																		5%	5%	5%
																																		30	30	30
																																		70%	70%	70%
																																		50%	50%	50%
																																		4	4	4
																																		20%	20%	20%
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																																		3	3	3
																																		5%	5%	5%
																																		2%	2%	2%
																																		3	3	3
																																		5%	5%	5%
																																		2%	2%	2%

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	2016 Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	2017 Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	2018 Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
	TBM	Not Estimated At This Time		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
				70%	70%	70%	70%	70%	70%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%			
				30%	30%	30%	30%	30%	30%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%			
	Loco	Brookville Tunneling Locomotive	100	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
				50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%			
				30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%			
	Shaft Crane	LTM 1200-5.1	496	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
				50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%			
				30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%			
	50T Crane	LTM 1050-3.1	367	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
				25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%			
				10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%			
	Compressors	Sullair 750H	275	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2			
				10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%			
				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			
	Generators	Terex T360	426	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
				10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%			
				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			
	Ventilation System	Not Estimated At This Time		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
				100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
				100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
	Loaders	Caterpillar 950H	197	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
				10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%			
				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			
	Pump	Tsurumi TE3-100HA	8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2			
				40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%			
				20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%			
	Grout Batch Plant	Chemgrout CG500/3x8/H	??	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
				20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%			
				10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%			
	Fork Lift	Caterpillar P20000	148	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2			
				10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%			
				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			
	Excavator	Liebherr R 934 C Litronic	195	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			
				10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%			
				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30			
				70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%			
				50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%			
	Concrete Truck	2003 STERLING LT 8513	300	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4			
				20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%			
				10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%			
	Fuel Truck	Not Estimated At This Time	300	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
				5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%			
				2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%			
	Potable Water Truck	Not Estimated At This Time	300	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
				2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%			
(TBM Tunneling) Tunnel Clean Up																																	1			
	Shaft Crane	LTM 1200-5.1	496																														30%			
																																	15%			
	Compressors	Sullair 750H	275																														1			
																																	40%			
																																	20%			
	Loaders	Caterpillar 950H	197																														1			
																																	25%			
																																	20%			
	Bobcat	S160 Skid Steer Loader	61																														1			
																																	60%			
																																	40%			
	Excavator	Liebherr R 934 C Litronic	195																														1			
																																	15%			
																																	10%			
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																														1			
																																	25%			
																																	20%			
	Fuel Truck	Not Estimated At This Time	300																														1			
																																	5%			
																																	2%			
	Potable Water Truck	Not Estimated At This Time	300																														1			
																																	5%			
																																	2%			
Installation of Final Liner																																					
Installation of Steel Liner																																	4	4	4		
	Loco	Brookville Tunneling Locomotive	100																														60%	60%	60%		
																																	40%	40%	40%		
	Grout Mixers	Chemgrout CGMIX128/E	Electric																														1	1	1		
																																	50%	50%	50%		
																																	30%	30%	30%		
	Grout Pumps	Putzmeister TK 60 HP	131																														1	1	1		
																																	50%	50%	50%		
																																	30%	30%	30%		
	Shaft Crane	LTM 1200-5.1	496																														1	1	1		
																																	50%	50%	50%		
																																	30%	30%	30%		
	Compressors	Sullair 750H	275																														1	1	1		
																																	15%	15%	15%		
																																	10%	10%	10%		
	Generators	Terex T360	426																														1	1	1		
																																	15%	15%	15%		
																																	10%	10%	10%		
	Ventilation System	Not Estimated At This Time																															1	1	1		
																																	100%	100%	100%		
																																	100%	100%	100%		
	Welding Machine	Not Estimated At This Time																															2	2	2		
																																	60%	60%	60%		
																																	30%	30%	30%		
	Tunnel Pipe Transporter	Not Estimated At This Time	400																														1	1	1		
																																	50%	50%	50%		
																																	30%	30%	30%		
	Excavator	Liebherr R 934 C Litronic	195																														1	1	1		
																																	25%	25%	25%		
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																														1	1	1		
																																	30%	30%	30%		
																																	20%	20%	20%		
	Concrete Truck	2003 STERLING LT 8513	300																														41	41	41		
																																	60%	60%	60%		
																																	40%	40%	40%		
	Fuel Truck	Not Estimated At This Time	300																														3	3	3		
																																	5%	5%	5%		
																																	2%	2%	2%		
	Potable Water Truck	Not Estimated At This Time	300																														3	3	3		
																																	5%	5%	5%		
																																	2%	2%	2%		
Installation of CIP against Steel Liner																																					
	Loco	Brookville Tunneling Locomotive	100																																		
	Shaft Crane	LTM 1200-5.1	496																																		
	Compressors	Sullair 750H	275																																		
	Generators	Terex T360	426																																		
	Ventilation System	Not Estimated At This Time																																			
	Concrete Pumps	Putzmeister TK 60 HP	131																																		
	Excavator	Liebherr R 934 C Litronic	195																																		
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																		

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
				2019												2020												2021											
	TBM	Not Estimated At This Time																																				
	Loco	Brookville Tunneling Locomotive	100																																			
	Shaft Crane	LTM 1200-5.1	496																																			
	50T Crane	LTM 1050-3.1	367																																			
	Compressors	Sullair 750H	275																																			
	Generators	Terex T360	426																																			
	Ventilation System	Not Estimated At This Time																																				
	Loaders	Caterpillar 950H	197																																			
	Pump	Tsurumi TE3-100HA	8																																			
	Grout Batch Plant	Chemgrout CG500/3x8/H	??																																			
	Fork Lift	Caterpillar P20000	148																																			
	Excavator	Liebherr R 934 C Litronic	195																																			
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																			
	Concrete Truck	2003 STERLING LT 8513	300																																			
	Fuel Truck	Not Estimated At This Time	300																																			
	Potable Water Truck	Not Estimated At This Time	300																																			
(TBM Tunneling) Tunnel Clean Up																																						
	Shaft Crane	LTM 1200-5.1	496																																			
	Compressors	Sullair 750H	275																																			
	Loaders	Caterpillar 950H	197																																			
	Bobcat	S160 Skid Steer Loader	61																																			
	Excavator	Liebherr R 934 C Litronic	195																																			
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																			
	Fuel Truck	Not Estimated At This Time	300																																			
	Potable Water Truck	Not Estimated At This Time	300																																			
Installation of Final Liner																																						
Installation of Steel Liner																																						
	Loco	Brookville Tunneling Locomotive	100	4 60% 40%	4 60% 40%	4 60% 40%	4 60% 40%	4 60% 40%	4 60% 40%	4 60% 40%	4 60% 40%	4 60% 40%																											
	Grout Mixers	Chemgrout CGMIX128/E	Electric	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%																											
	Grout Pumps	Putzmeister TK 60 HP	131	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%																											
	Shaft Crane	LTM 1200-5.1	496	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%	1 50% 30%																											
	Compressors	Sullair 750H	275	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%																											
	Generators	Terex T360	426	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%	1 15% 10%																											
	Ventilation System	Not Estimated At This Time		1 100% 100%	1 100% 100%	1 100% 100%	1 100% 100%	1 100% 100%	1 100% 100%	1 100% 100%	1 100% 100%	1 100% 100%																											
	Welding Machine	Not Estimated At This Time		6 60% 30%	6 60% 30%	6 60% 30%	6 60% 30%	6 60% 30%	6 60% 30%	6 60% 30%	6 60% 30%	6 60% 30%																											
	Tunnel Pipe Transporter	Not Estimated At This Time	400	2 50% 30%	2 50% 30%	2 50% 30%	2 50% 30%	2 50% 30%	2 50% 30%	2 50% 30%	2 50% 30%	2 50% 30%																											
	Excavator	Liebherr R 934 C Litronic	195	1 25% 20%	1 25% 20%	1 25% 20%	1 25% 20%	1 25% 20%	1 25% 20%	1 25% 20%	1 25% 20%	1 25% 20%																											
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	1 30% 20%	1 30% 20%	1 30% 20%	1 30% 20%	1 30% 20%	1 30% 20%	1 30% 20%	1 30% 20%	1 30% 20%																											
	Concrete Truck	2003 STERLING LT 8513	300	41 60% 40%	41 60% 40%	41 60% 40%	41 60% 40%	41 60% 40%	41 60% 40%	41 60% 40%	41 60% 40%	41 60% 40%																											
	Fuel Truck	Not Estimated At This Time	300	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%																											
	Potable Water Truck	Not Estimated At This Time	300	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%	3 5% 2%																											
Installation of CIP against Steel Liner																																						
	Loco	Brookville Tunneling Locomotive	100													4 60% 40%	4 60% 40%	4 60% 40%																				
	Shaft Crane	LTM 1200-5.1	496													1 50% 30%	1 50% 30%	1 50% 30%																				
	Compressors	Sullair 750H	275													1 10% 5%	1 10% 5%	1 10% 5%																				
	Generators	Terex T360	426													1 100% 100%	1 100% 100%	1 100% 100%																				
	Ventilation System	Not Estimated At This Time														1 100% 100%	1 100% 100%	1 100% 100%																				
	Concrete Pumps	Putzmeister TK 60 HP	131													1 50% 30%	1 50% 30%	1 50% 30%																				
	Excavator	Liebherr R 934 C Litronic	195													1 10% 5%	1 10% 5%	1 10% 5%																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300													10 15% 10%	10 15% 10%	10 15% 10%																				

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of CIP against TBM Tunnel (Westside)					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of CIP against Starter Tunnel					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of CIP liner against Connector Tunnel - SB					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of Shaft Plug and Distribution Chamber					
Construction of Mass Concrete Shaft Plug					
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Compressors	Sullair 750H	275	No	Above Ground
	Generators	Terex T360	426	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
Excvation and Final Lining of Distirbution Chamber					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Above Ground

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2013: 1 2 3 4 5 6 7 8 9 10 11 12
2014: 1 2 3 4 5 6 7 8 9 10 11 12
2015: 1 2 3 4 5 6 7 8 9 10 11 12

Jan-13 Feb-13 Mar-13 Apr-13 May-13 Jun-13 Jul-13 Aug-13 Sep-13 Oct-13 Nov-13 Dec-13 Jan-14 Feb-14 Mar-14 Apr-14 May-14 Jun-14 Jul-14 Aug-14 Sep-14 Oct-14 Nov-14 Dec-14 Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
				2016												2017												2018											
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Fuel Truck	Not Estimated At This Time	300																																				
	Potable Water Truck	Not Estimated At This Time	300																																				
Installation of CIP against TBM Tunnel (Westside)																																							
	Loco	Brookville Tunneling Locomotive	100																																				
	Shaft Crane	LTM 1200-5.1	496																																				
	Compressors	Sullair 750H	275																																				
	Generators	Terex T360	426																																				
	Ventilation System	Not Estimated At This Time																																					
	Concrete Pumps	Putzmeister TK 60 HP	131																																				
	Excavator	Liebherr R 934 C Litronic	195																																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Fuel Truck	Not Estimated At This Time	300																																				
	Potable Water Truck	Not Estimated At This Time	300																																				
Installation of CIP against Starter Tunnel																																							
	Loco	Brookville Tunneling Locomotive	100																																				
	Shaft Crane	LTM 1200-5.1	496																																				
	Compressors	Sullair 750H	275																																				
	Generators	Terex T360	426																																				
	Ventilation System	Not Estimated At This Time																																					
	Concrete Pumps	Putzmeister TK 60 HP	131																																				
	Excavator	Liebherr R 934 C Litronic	195																																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Fuel Truck	Not Estimated At This Time	300																																				
	Potable Water Truck	Not Estimated At This Time	300																																				
Installation of CIP liner against Connector Tunnel - SB																																							
	Loco	Brookville Tunneling Locomotive	100																																				
	Shaft Crane	LTM 1200-5.1	496																																				
	Compressors	Sullair 750H	275																																				
	Generators	Terex T360	426																																				
	Ventilation System	Not Estimated At This Time																																					
	Concrete Pumps	Putzmeister TK 60 HP	131																																				
	Excavator	Liebherr R 934 C Litronic	195																																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Fuel Truck	Not Estimated At This Time	300																																				
	Potable Water Truck	Not Estimated At This Time	300																																				
Installation of Shaft Plug and Distribution Chamber																																							
Construction of Mass Concrete Shaft Plug																																							
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Concrete Pumps	Putzmeister TK 60 HP	131																																				
	Shaft Crane	LTM 1200-5.1	496																																				
	Fuel Truck	Not Estimated At This Time	300																																				
	Compressors	Sullair 750H	275																																				
	Generators	Terex T360	426																																				
	Fuel Truck	Not Estimated At This Time	300																																				
Excvation and Final Lining of Distirbution Chamber																																							
	Shaft Crane	LTM 1200-5.1	496																																				
	Compressors	Sullair 750H	275																																				

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
												25	25	25																							
	Concrete Truck	2003 STERLING LT 8513	300									50%	50%	50%																							
												30%	30%	30%																							
												5	5	5																							
	Fuel Truck	Not Estimated At This Time	300									5%	5%	5%																							
												5%	5%	5%																							
												5	5	5																							
	Potable Water Truck	Not Estimated At This Time	300									5%	5%	5%																							
												5%	5%	5%																							
Installation of CIP against TBM Tunnel (Westside)																																					
	Loco	Brookville Tunneling Locomotive	100												4																						
															60%																						
															40%																						
	Shaft Crane	LTM 1200-5.1	496												3																						
															50%																						
															30%																						
	Compressors	Sullair 750H	275												1																						
															10%																						
															5%																						
	Generators	Terex T360	426												2																						
															100%																						
															100%																						
	Ventilation System	Not Estimated At This Time													2																						
															100%																						
															100%																						
	Concrete Pumps	Putzmeister TK 60 HP	131												2																						
															50%																						
															30%																						
	Excavator	Liebherr R 934 C Litronic	195												1																						
															10%																						
															5%																						
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300												16																						
															15%																						
															10%																						
	Concrete Truck	2003 STERLING LT 8513	300												10																						
															50%																						
															30%																						
	Fuel Truck	Not Estimated At This Time	300												2																						
															5%																						
															5%																						
	Potable Water Truck	Not Estimated At This Time	300												2																						
															5%																						
															5%																						
Installation of CIP against Starter Tunnel																																					
	Loco	Brookville Tunneling Locomotive	100													4																						
																60%																						
																40%																						
	Shaft Crane	LTM 1200-5.1	496													3																						
																50%																						
																30%																						
	Compressors	Sullair 750H	275													1																						
																10%																						
																5%																						
	Generators	Terex T360	426													2																						
																100%																						
																100%																						
	Ventilation System	Not Estimated At This Time														2																						
																100%																						
																100%																						
	Concrete Pumps	Putzmeister TK 60 HP	131													2																						
																50%																						
																30%																						
	Excavator	Liebherr R 934 C Litronic	195													1																						
																10%																						
																5%																						
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300													11																						
																15%																						
																10%																						
	Concrete Truck	2003 STERLING LT 8513	300													7																						
																50%																						
																30%																						
	Fuel Truck	Not Estimated At This Time	300													2																						
																5%																						
																5%																						
	Potable Water Truck	Not Estimated At This Time	300													2																						
																5%																						
																5%																						
Installation of CIP liner against Connector Tunnel - SB																																					
	Loco	Brookville Tunneling Locomotive	100														4																					
																	60%																					
																	40%																					
	Shaft Crane	LTM 1200-5.1	496														3																					
																	50%																					
																	30%																					
	Compressors	Sullair 750H	275														1																					
																	10%																					
																	5%																					
	Generators	Terex T360	426														2																					
																	100%																					
																	100%																					
	Ventilation System	Not Estimated At This Time															2																					
																	100%																					
																	100%																					
	Concrete Pumps	Putzmeister TK 60 HP	131														1																					
																	50%																					
																	30%																					
	Excavator	Liebherr R 934 C Litronic	195														1																					
																	10%																					
																	5%																					
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300														11																					
																	15%																					
																	10%																					
	Concrete Truck	2003 STERLING LT 8513	300														7																					
																	50%																					
																	30%																					
	Fuel Truck	Not Estimated At This Time	300														2																					
																	5%																					
																	5%																					
	Potable Water Truck	Not Estimated At This Time	300														2																					
																	5%																					
																	5%																					
Installation of Shaft Plug and Distribution Chamber																																					
Construction of Mass Concrete Shaft Plug																																					
	Concrete Truck	2003 STERLING LT 8513	300															38																				
																		50%																				
																		25%																				
	Concrete Pumps	Putzmeister TK 60 HP	131															38																				
																		50%																				
																		25%																				
	Shaft Crane	LTM 1200-5.1	496															4																				
																		10%																				
																		5%																				
	Fuel Truck	Not Estimated At This Time	300															3																				
																		2%																				
																		2%																				
	Compressors	Sullair 750H	275															1																				
																		5%																				
																		2%																				
	Generators	Terex T360	426															1																				
																		5%																				
																		2%																				
	Fuel Truck	Not Estimated At This Time	300															1																				
																		2%																				
																		2%																				
Excvation and Final Lining of Distirbution Chamber																																					
	Shaft Crane	LTM 1200-5.1	496																1																			
																			20%																			
																			10%																			
	Compressors	Sullair 750H	275																1																			
																			15%																			
																			10%																			

	2019												2020												2021											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location
	Generators	Terex T360	426	No	Above Ground
	Drill Jumbo	Sandvik DT920i	241	No	Above Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Shaft 5B PHASE 2 WORKS					
Shaft 5B Activity					
Inundation Plug					
Inundation Plug Construction - Plug Hole Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760	Yes	Above Ground
Inundation Plug Construction - Pump Shaft Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760	Yes	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time		No	Above Ground
Placement of Pea Gravel and Tremie Concrete Plug **(ACTIVITY DURATION IS A WEEK - DOES NOT OVERLAP)**	Compressors	Sullair 750H	275	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
Initial unwatering of the tunnel (activity duration is 11 days)	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250	No	Below Ground
Continued Unaterring of the tunnel	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250	No	Below Ground
Advance Connector Tunnels (150 ft)					
Excavation & Installation of Initial Support					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40	Yes	Above Ground
	Shotcrete Delivery Plant	Not Estimated At This Time		Yes	Above Ground
	Drill Jumbo	Sandvik DT920i	241	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
Junction Chamber					
Excavation and Installation of Temp. support for Junction Chamber					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40	Yes	Above Ground
	Shotcrete Delivery Plant	Not Estimated At This Time		Yes	Above Ground
	Drill Jumbo	Sandvik DT920i	241	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Generators	Terex T360	426
	Drill Jumbo	Sandvik DT920i	241
	Loaders	Caterpillar 950H	197
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Shaft 5B PHASE 2 WORKS			
Shaft 5B Activity			
Inundation Plug			
Inundation Plug Construction - Plug Hole Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760
Inundation Plug Construction - Pump Shaft Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Fuel Truck	Not Estimated At This Time	
Placement of Pea Gravel and Tremie Concrete Plug **(ACTIVITY DURATION IS A WEEK - DOES NOT OVERLAP)**	Compressors	Sullair 750H	275
	Loaders	Caterpillar 950H	197
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	
	Concrete Pumps	Putzmeister TK 60 HP	131
Initial unwatering of the tunnel (activity duration is 11 days)	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250
Continued Unaterring of the tunnel	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250
Advance Connector Tunnels (150 ft)			
Excavation & Installation of Initial Support			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Generators	Terex T360	426
	Loaders	Caterpillar 950H	197
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40
	Shotcrete Delivery Plant	Not Estimated At This Time	
	Drill Jumbo	Sandvik DT920i	241
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
	Ventilation System	Not Estimated At This Time	
	Concrete Pumps	Putzmeister TK 60 HP	131
Junction Chamber			
Excavation and Installation of Temp. support for Junction Chamber			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Generators	Terex T360	426
	Loaders	Caterpillar 950H	197
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40
	Shotcrete Delivery Plant	Not Estimated At This Time	
	Drill Jumbo	Sandvik DT920i	241
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300

2016												2017												2018											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
				2019												2020												2021											
	Generators	Terex T360	426																1 5% 2%																			
	Drill Jumbo	Sandvik DT920i	241																1 20% 10%																			
	Loaders	Caterpillar 950H	197																1 35% 20%																			
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																1 25% 15%																			
	Concrete Truck	2003 STERLING LT 8513	300																1 15% 5%																			
	Fuel Truck	Not Estimated At This Time	300																1 5% 2%																			
	Potable Water Truck	Not Estimated At This Time	300																1 5% 2%																			
Shaft 5B PHASE 2 WORKS																																					
Shaft 5B Activity																																					
Inundation Plug																																					
Inundation Plug Construction - Plug Hole Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760																						2 100% 100%	2 100% 100%												
Inundation Plug Construction - Pump Shaft Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760																						1 100% 100%	1 100% 100%												
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																						3 10% 5%	3 10% 5%												
	Fuel Truck	Not Estimated At This Time																							1 5% 2%	1 5% 2%												
Placement of Pea Gravel and Tremie Concrete Plug **(ACTIVITY DURATION IS A WEEK - DOES NOT OVERLAP)**	Compressors	Sullair 750H	275																							1 15% 10%												
	Loaders	Caterpillar 950H	197																							1 25% 10%												
	Concrete Truck	2003 STERLING LT 8513	300																							24 30% 5%												
	Fuel Truck	Not Estimated At This Time																								1 5% 2%												
	Concrete Pumps	Putzmeister TK 60 HP	131																							2 30% 5%												
Initial unwatering of the tunnel (activity duration is 11 days)	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250																							3 100% 100%												
Continued Unaterring of the tunnel	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250																								3 40% 40%	3 40% 40%	3 40% 40%	3 40% 40%								
Advance Connector Tunnels (150 ft)																																					
Excavation & Installation of Initial Support																																					
	Shaft Crane	LTM 1200-5.1	496																								1 35% 20%											
	Compressors	Sullair 750H	275																								1 10% 5%											
	Generators	Terex T360	426																								1 100% 100%											
	Loaders	Caterpillar 950H	197																								1 30% 20%											
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40																								1 25% 15%											
	Shotcrete Delivery Plant	Not Estimated At This Time																									1 25% 15%											
	Drill Jumbo	Sandvik DT920i	241																								1 50% 30%											
	Excavator	Liebherr R 934 C Litronic	195																								1 10% 5%											
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																								1 30% 20%											
	Concrete Truck	2003 STERLING LT 8513	300																								1 50% 30%											
	Fuel Truck	Not Estimated At This Time	300																								1 5% 2%											
	Potable Water Truck	Not Estimated At This Time	300																								1 5% 2%											
	Ventilation System	Not Estimated At This Time																									1 100% 100%											
	Concrete Pumps	Putzmeister TK 60 HP	131																								1 30% 25%											
Junction Chamber																																					
Excavation and Installation of Temp. support for Junction Chamber																																					
	Shaft Crane	LTM 1200-5.1	496																									1 35% 20%										
	Compressors	Sullair 750H	275																									1 10% 5%										
	Generators	Terex T360	426																									1 100% 100%										
	Loaders	Caterpillar 950H	197																									2 30% 20%										
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40																									1 25% 15%										
	Shotcrete Delivery Plant	Not Estimated At This Time																										1 25% 15%										
	Drill Jumbo	Sandvik DT920i	241																									1 50% 30%										
	Excavator	Liebherr R 934 C Litronic	195																									1 10% 5%										
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																									23 30% 20%										
	Concrete Truck	2003 STERLING LT 8513	300																									2 50% 30%										
	Fuel Truck	Not Estimated At This Time	300																									1 5% 2%										
	Potable Water Truck	Not Estimated At This Time	300																									1 5% 2%										

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
Final Lining / Backfill Junction Chamber					
	Loco	Brookville Tunneling Locomotive (Diesel)	100	No	
	Shaft Crane	LTM 1200-5.1	496	No	
	Compressors	Sullair 750H	275	No	
	Generators	Terex T360	426	No	
	Excavator	Liebherr R 934 C Litronic	195	No	
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	
	Concrete Truck	2003 STERLING LT 8513	300	No	
	Fuel Truck	Not Estimated At This Time	300	No	
	Potable Water Truck	Not Estimated At This Time	300	No	
Installation of Final Liner					
Final Lining Connector Tunnel					
	Loco	Brookville Tunneling Locomotive (Diesel)	100	No	
	Shaft Crane	LTM 1200-5.1	496	No	
	Compressors	Sullair 750H	275	No	
	Generators	Terex T360	426	No	
	Excavator	Liebherr R 934 C Litronic	195	No	
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	
	Concrete Truck	2003 STERLING LT 8513	300	No	
	Fuel Truck	Not Estimated At This Time	300	No	
	Potable Water Truck	Not Estimated At This Time	300	No	
Shaft 5B Operation or Post Construction					
Overall Clean Up	Overall Clean Up				
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Bobcat	S160 Skid Steer Loader	61	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Shaft 5B Demobilization					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Bobcat	S160 Skid Steer Loader	61	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground

East Shaft (Shaft 6B Site)

Shaft 6B Site Preparation					
Site Preparation East Shaft Stage 1 - Tree Cutting/Clearing					
	Log Hauler	Kenworth 900B W/Log Hauler	500	No	Above Ground
	Harvester	John Deere 759H	241	No	Above Ground
	Chipper	Vermeer WC2300	440	No	Above Ground
	Boom Truck	Terex BT 5092	300	No	Above Ground
	Pickup Truck	Ford F-150	365	No	Above Ground
Site Preparation East Shaft Stage 2 - Install Fence/Excavate Sediment Basin/manholes					
	Pickup Truck	Ford F-150	365	No	Above Ground
	Excavator	John Deere 450D LC	348	No	Above Ground
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground

Action	Resource	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
Site Preparation East Shaft Stage 1 - Tree Cutting/Clearing																																					
	Log Hauler													1	1																						
														75%	75%																						
														25%	25%																						
	Harvester													1	1																						
														80%	80%																						
														50%	50%																						
	Chipper													2	2																						
														80%	80%																						
														25%	25%																						
	Boom Truck													1	1																						
														25%	25%																						
														25%	25%																						
	Pickup Truck													2	2																						
														20%	20%																						
														100%	100%																						
Site Preparation East Shaft Stage 2 - Install Fence/Excavate Sediment Basin/manholes																																					
	Pickup Truck																2	2																				
																	20%	20%																				
																	100%	100%																				
	Excavator																2	2																				
																	50%	50%																				
																	75%	75%																				
	Standard Backhoe																2	2																				
																	80%	80%																				

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Ventilation System	Not Estimated At This Time	
	Concrete Pumps	Putzmeister TK 60 HP	131
Final Lining / Backfill Junction Chamber			
	Loco	Brookville Tunneling Locomotive (Diesel)	100
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Generators	Terex T360	426
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Installation of Final Liner			
Final Lining Connector Tunnel			
	Loco	Brookville Tunneling Locomotive (Diesel)	100
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Generators	Terex T360	426
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Shaft 5B Operation or Post Construction			
Overall Clean Up	Overall Clean Up		
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Loaders	Caterpillar 950H	197
	Bobcat	S160 Skid Steer Loader	61
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Shaft 5B Demobilization			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Loaders	Caterpillar 950H	197
	Bobcat	S160 Skid Steer Loader	61
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
East Shaft (Shaft 6B Site)			
Shaft 6B Site Preparation			
Site Preparation East Shaft Stage 1 - Tree Cutting/Clearing			
	Log Hauler	Kenworth 900B W/Log Hauler	500
	Harvester	John Deere 759H	241
	Chipper	Vermeer WC2300	440
	Boom Truck	Terex BT 5092	300
	Pickup Truck	Ford F-150	365
Site Preparation East Shaft Stage 2 - Install Fence/Excavate Sediment Basin/manholes			
	Pickup Truck	Ford F-150	365
	Excavator	John Deere 450D LC	348
	Standard Backhoe	Caterpillar 450E	124

2016												2017												2018											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
				2019												2020												2021											
	Ventilation System	Not Estimated At This Time																										100%											
																												100%											
	Concrete Pumps	Putzmeister TK 60 HP	131																									1											
																												30%											
Final Lining / Backfill Junction Chamber																												25%											
	Loco	Brookville Tunneling Locomotive (Diesel)	100																										2										
																													60%										
																													40%										
	Shaft Crane	LTM 1200-5.1	496																										1										
																													50%										
																													30%										
	Compressors	Sullair 750H	275																										1										
																													10%										
																													5%										
	Generators	Terex T360	426																										1										
																													100%										
																													100%										
	Excavator	Liebherr R 934 C Litronic	195																										1										
																													10%										
																													5%										
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																										2										
																													15%										
																													10%										
	Concrete Truck	2003 STERLING LT 8513	300																										1										
																													50%										
																													30%										
	Fuel Truck	Not Estimated At This Time	300																										1										
																													5%										
																													5%										
	Potable Water Truck	Not Estimated At This Time	300																										2										
																													5%										
																													5%										
Installation of Final Liner																																							
Final Lining Connector Tunnel																																							
	Loco	Brookville Tunneling Locomotive (Diesel)	100																											2										
																														60%										
																														40%										
	Shaft Crane	LTM 1200-5.1	496																											1										
																														50%										
																														30%										
	Compressors	Sullair 750H	275																											1										
																														10%										
																														5%										
	Generators	Terex T360	426																											1										
																														100%										
																														100%										
	Excavator	Liebherr R 934 C Litronic	195																											1										
																														10%										
																														5%										
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																											2										
																														15%										
																														10%										
	Concrete Truck	2003 STERLING LT 8513	300																											1										
																														50%										
																														30%										
	Fuel Truck	Not Estimated At This Time	300																											1										
																														5%										
																														5%										
	Potable Water Truck	Not Estimated At This Time	300																											2										
																														5%										
																														5%										
Shaft 5B Operation or Post Construction																																							
Overall Clean Up	Overall Clean Up																														1	1							
	Shaft Crane	LTM 1200-5.1	496																												15%	15%							
																															5%	5%							
	Compressors	Sullair 750H	275																												1	1							
																															10%	10%							
																															5%	5%							
	Loaders	Caterpillar 950H	197																												2	2							
																															25%	25%							
																															15%	15%							
	Bobcat	S160 Skid Steer Loader	61																												2	2							
																															25%	25%							
																															15%	15%							
	Excavator	Liebherr R 934 C Litronic	195																												1	1							
																															5%	5%							
																															2%	2%							
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																												4	4							
																															10%	10%							
																															5%	5%							
	Fuel Truck	Not Estimated At This Time	300																												1	1							
																															5%	5%							
																															2%	2%							
	Potable Water Truck	Not Estimated At This Time	300																												1	1							
																															5%	5%							
																															2%	2%							
Shaft 5B Demobilization																																	1	1					
	Shaft Crane	LTM 1200-5.1	496																														15%	15%					
																																	5%	5%					
	Compressors	Sullair 750H	275																														1	1					
																																	10%	10%					
																																	5%	5%					
	Loaders	Caterpillar 950H	197																														2	2					
																																	25%	25%					
																																	15%	15%					
	Bobcat	S160 Skid Steer Loader	61																														2	2					
																																	25%	25%					
																																	15%	15%					
	Excavator	Liebherr R 934 C Litronic	195																														1	1					
																																	5%	5%					
																																	2%	2%					
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																														4	4					
																																	10%	10%					
																																	5%	5%					
	Fuel Truck	Not Estimated At This Time	300																														1	1					
																																	5%	5%					
																																	2%	2%					
	Potable Water Truck	Not Estimated At This Time	300																														1	1					
																																	5%	5%					
																																	2%	2%					

East Shaft (Shaft 6B Site)

Action	Resource	Equipment Model Assumption	Estimated Horsepower
Shaft 6B Site Preparation			
Site Preparation East Shaft Stage 1 - Tree Cutting/Clearing			
	Log Hauler	Kenworth 900B W/Log Hauler	500
	Harvester	John Deere 759H	241
	Chipper	Vermeer WC2300	440
	Boom Truck	Terex BT 5092	300
	Pickup Truck	Ford F-150	365
Site Preparation East Shaft Stage 2 - Install Fence/Excavate Sediment Basin/manholes			
	Pickup Truck	Ford F-150	365
	Excavator	John Deere 450D LC	348
	Standard Backhoe	Caterpillar 450E	124

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
						J	F	M	A	J	J																													
						2013												2014												2015											
						1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
								80%	80%																															
								2	2																															
	Front End Loader	Caterpillar 950H	197	No	Above Ground			100%	100%																															
								50%	50%																															
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground			2	2																															
								100%	100%																															
								50%	50%																															
	Bulldozer	Caterpillar D8T	310	No	Above Ground			1	1																															
								100%	100%																															
								75%	50%																															
	Water Tanker	Peterbilt 340	330	No	Above Ground			1	1																															
								25%	25%																															
								25%	25%																															
	Hydroseeder	FINN Model T120 Hydroseeder	35	No	Above Ground			1	1																															
								10%	10%																															
								10%	10%																															
Site Preparation East Shaft Stage 3- Grubbing/Stripping/Rough Grading																																							
	Pickup Truck	Ford F-150	365	No	Above Ground					2	2																														
										20%	20%																														
										100%	100%																														
	Excavator	John Deere 450D LC	348	No	Above Ground					1	1																														
										100%	100%																														
										75%	75%																														
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground					1	1																														
										100%	100%																														
										80%	80%																														
	Front End Loader	Caterpillar 950H	197	No	Above Ground					1	1																														
										100%	100%																														
										80%	80%																														
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground					2	2																														
										100%	100%																														
										75%	75%																														
	Bulldozer	Caterpillar D8T	310	No	Above Ground					1	1																														
										100%	100%																														
										75%	75%																														
	Water Tanker	Peterbilt 340	330	No	Above Ground					1	1																														
										100%	100%																														
										75%	75%																														
	Hydroseeder	FINN Model T120 Hydroseeder	35	No	Above Ground					1	1																														
										20%	20%																														
										10%	10%																														
Site Preparation East Shaft Stage 4 - Final Grading/Roadway																																								
	Grader	John Deere 770G/GP	245	No	Above Ground									1	1																										
														80%	80%																										
														50%	50%																										
	Paver	Caterpillar AP-1000D	224	No	Above Ground									1	1																										
														75%	75%																										
														75%	75%																										
	Roller	Caterpillar CB34 XW	46	No	Above Ground									1	1																										
														75%	75%																										
														75%	75%																										
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground									2	2																										
														75%	75%																										
														75%	75%																										
	Asphalt Flow Boy	Flow Boy 3064	425	No	Above Ground									1	1																										
														75%	75%																										
														75%	75%																										
	12 Yard Concrete Mixer	Peterbilt 365	455	No	Above Ground									1	1																										
														50%	50%																										
														50%	50%																										
	Water Tanker	Peterbilt 340	330	No	Above Ground									1	1																										
														75%	75%																										
														75%	75%																										
	Hydroseeder	FINN Model T120 Hydroseeder	35	No	Above Ground									1	1																										
														20%	20%																										
														10%	10%																										
Site Preparation East Shaft Stage 5 - Installation of Offices																																								
	Pickup Truck	Ford F-150	365	No	Above Ground										1																										
															20%																										
															100%																										
	Trailer Truck		455	No	Above Ground										1																										
															50%																										
															50%																										
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground										1																										
															75%																										
															50%																										
Shaft 6B Construction																																								
Stage 1 - Secant Piles (July to mid-August																																								
	Compressors	Sullair 750H	275	No	Above Ground							1																													
												20%																													
												10%																													
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground							1																													
												50%																													
												50%																													
	Piling Rig	Bauer. BG 12H Rotary Drilling Rig. Base Carrier BT35.	205	No	Above Ground							1																													
												87%																													
												43%																													
	Concrete Truck	2003 STERLING LT8513	300	No	Above Ground							2																													
												50%																													
												25%																													
	Fuel Truck	Freightliner FL-80	300	No	Above Ground							3																													
												50%																													
												25%																													
	Loaders	Caterpillar 950H	197	No	Above Ground							1																													
												60%																													
												60%																													
	Pump	Tsurumi TE3-100HA	8	No	Above Ground							-																													
Stage 2 - Excavation and Lining of Shaft in Soil (mid-August to September)																																								
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground								1	-																											
													80%	80%																											
													20%	20%																											
	Compressors	Sullair 750H	275	No	Above Ground								1	1																											
													20%	20%																											
													10%	10%																											
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground								9	9																											
													50%	50%																											
													50%	50%																											
	Concrete Truck	2003 STERLING LT8513	300	No	Above Ground								-	-																											
	Fuel Truck	Freightliner FL-80	300	No	Above Ground								3	3																											
													50%	50%																											
													25%	25%																											
	Potable Water Truck	Freightliner FL-80	300	No	Above Ground								3	3																											
													25%	25%																											
													10%	10%																											
	Generators	Terex T360	426	No	Above Ground								-	-																											
	Loaders	Caterpillar 950H	197	No	Above Ground								1	1																											
													60%	87%																											
													60%	87%																											
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground								-	-																											
	Excavator	Liebherr R 934 C Litronic	195	No	Below Ground								1	1																											
													10%	87%																											
													5%	87%																											
	Pump	Tsurumi TE3-100HA	8	No	Above Ground								-	3																											
														20%																											
														10%																											
	Fork Lift	Caterpillar P20000	148	No	Above Ground								-	-																											
Excavation, Initial support, shaft lining in rock (includes general deliveries)																																								
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
														50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%					
														50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%					

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Front End Loader	Caterpillar 950H	197
	20 Yard Dump Truck	Kenworth T800	525
	Bulldozer	Caterpillar D8T	310
	Water Tanker	Peterbilt 340	330
	Hydroseeder	FINN Model T120 Hydroseeder	35
Site Preparation East Shaft Stage 3- Grubbing/Stripping/Rough Grading			
	Pickup Truck	Ford F-150	365
	Excavator	John Deere 450D LC	348
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	20 Yard Dump Truck	Kenworth T800	525
	Bulldozer	Caterpillar D8T	310
	Water Tanker	Peterbilt 340	330
	Hydroseeder	FINN Model T120 Hydroseeder	35
Site Preparation East Shaft Stage 4 - Final Grading/Roadway			
	Grader	John Deere 770G/GP	245
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46
	20 Yard Dump Truck	Kenworth T800	525
	Asphalt Flow Boy	Flow Boy 3064	425
	12 Yard Concrete Mixer	Peterbilt 365	455
	Water Tanker	Peterbilt 340	330
	Hydroseeder	FINN Model T120 Hydroseeder	35
Site Preparation East Shaft Stage 5 - Installation of Offices			
	Pickup Truck	Ford F-150	365
	Trailer Truck		455
	Standard Backhoe	Caterpillar 450E	124
Shaft 6B Construction			
Stage 1 - Secant Piles (July to mid-August			
	Compressors	Sullair 750H	275
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Piling Rig	Bauer. BG 12H Rotary Drilling Rig. Base Carrier BT35.	205
	Concrete Truck	2003 STERLING LT8513	300
	Fuel Truck	Freightliner FL-80	300
	Loaders	Caterpillar 950H	197
	Pump	Tsurumi TE3-100HA	8
Stage 2 - Excavation and Lining of Shaft in Soil (mid-August to September)			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT8513	300
	Fuel Truck	Freightliner FL-80	300
	Potable Water Truck	Freightliner FL-80	300
	Generators	Terex T360	426
	Loaders	Caterpillar 950H	197
	Concrete Pumps	Putzmeister TK 60 HP	131
	Excavator	Liebherr R 934 C Litronic	195
	Pump	Tsurumi TE3-100HA	8
	Fork Lift	Caterpillar P20000	148
Excavation, Initial support, shaft lining in rock (includes general deliveries)			
	Shaft Crane	LTM 1200-5.1	496

	2016												2017												2018											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Front End Loader	Caterpillar 950H	197
	20 Yard Dump Truck	Kenworth T800	525
	Bulldozer	Caterpillar D8T	310
	Water Tanker	Peterbilt 340	330
	Hydroseeder	FINN Model T120 Hydroseeder	35
Site Preparation East Shaft Stage 3- Grubbing/Stripping/Rough Grading			
	Pickup Truck	Ford F-150	365
	Excavator	John Deere 450D LC	348
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	20 Yard Dump Truck	Kenworth T800	525
	Bulldozer	Caterpillar D8T	310
	Water Tanker	Peterbilt 340	330
	Hydroseeder	FINN Model T120 Hydroseeder	35
Site Preparation East Shaft Stage 4 - Final Grading/Roadway			
	Grader	John Deere 770G/GP	245
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46
	20 Yard Dump Truck	Kenworth T800	525
	Asphalt Flow Boy	Flow Boy 3064	425
	12 Yard Concrete Mixer	Peterbilt 365	455
	Water Tanker	Peterbilt 340	330
	Hydroseeder	FINN Model T120 Hydroseeder	35
Site Preparation East Shaft Stage 5 - Installation of Offices			
	Pickup Truck	Ford F-150	365
	Trailer Truck		455
	Standard Backhoe	Caterpillar 450E	124
Shaft 6B Construction			
Stage 1 - Secant Piles (July to mid-August			
	Compressors	Sullair 750H	275
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Piling Rig	Bauer. BG 12H Rotary Drilling Rig. Base Carrier BT35.	205
	Concrete Truck	2003 STERLING LT8513	300
	Fuel Truck	Freightliner FL-80	300
	Loaders	Caterpillar 950H	197
	Pump	Tsurumi TE3-100HA	8
Stage 2 - Excavation and Lining of Shaft in Soil (mid-August to September)			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT8513	300
	Fuel Truck	Freightliner FL-80	300
	Potable Water Truck	Freightliner FL-80	300
	Generators	Terex T360	426
	Loaders	Caterpillar 950H	197
	Concrete Pumps	Putzmeister TK 60 HP	131
	Excavator	Liebherr R 934 C Litronic	195
	Pump	Tsurumi TE3-100HA	8
	Fork Lift	Caterpillar P20000	148
Excavation, Initial support, shaft lining in rock (includes general deliveries)			
	Shaft Crane	LTM 1200-5.1	496

	2019												2020												2021											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21

Equipment by Task

																J	F	M	A	J	J																				
						2013												2014												2015											
						1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
	Shotcrete Pump	Putzmeister TK 60 HP	131	No	Above Ground									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
														10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%							
														5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%							
	Ventilation System	Not Estimated At This Time		No	Above Ground									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%							
														100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%							
	Compressors	Sullair 750H	275	No	Above Ground									2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2							
														20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%							
														5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%							
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground									13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13							
														30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%							
														30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%							
	Concrete Truck	2003 STERLING LT8513	300	No	Above Ground									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
														87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%							
														40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%							
	Fuel Truck	Freightliner FL-80	300	No	Above Ground									3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
														15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%							
														7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%							
	Potable Water Truck	Freightliner FL-80	300	No	Above Ground									3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
														1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%							
														1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%							
	Loaders	Caterpillar 950H	197	No	Above Ground									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
														30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%							
														30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%							
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
														87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%	87%							
														40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%							
	Pump	Tsurumi TE3-100HA	8	No	Above Ground									3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
														10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%							
														5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%							
	150000 lb Winch	Ingersoll Rand HA3-075M	25	No	Above Ground									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
	Hydraulic Winches	Ingersoll Rand LC2H500Q	??	No	Above Ground									4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							
														10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%							
														5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%							
	100000 lbs Winch	Ingersoll Rand HA2-050M	9.4	No	Above Ground									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
	PB Winch	Timberland E780 General Purpose Winch	??	No	Above Ground									4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							
														10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%							
														5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%							
	Drill Jumbos	Sandvik DD530	228	No	Above Ground									2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2							
														30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%							
														30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%							
	Fork Lift	Caterpillar P20000	148	No	Above Ground									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
														30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%							
														15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%							
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground									1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
														10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%							
														10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%							
Shaft 6B Connector Tunnel																																									
Excavation & Installation of Initial Support																																									
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground																														1						
																																	35%						
																																	20%						
	Compressors	Sullair 750H	275	No	Below Ground																														1						
																																	10%						
																																	5%						
	Ventilation System	Not Estimated At This Time		No	Above Ground																														1						
																																	100%						
																																	100%						
	Generators	Terex T360	426	No	Below Ground																														1						
																																	100%						
																																	100%						
	Loaders	Caterpillar 950H	197	No	Above Ground																														1						
																																	20%						
																																	15%						
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40	Yes	Above Ground																														1						
																																	15%						
																																	10%						
	Shotcrete Delivery Plant	Not Estimated At This Time		Yes	Above Ground																														1						
																																	30%						
																																	25%						
	Drill Jumbo	Sandvik DT920i	241	No	Below Ground																														1						
																																	35%						
																																	20%						
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground																														9						
																																	30%						
																																	25%						
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground																														3						
																																	50%						
																																	25%						
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground																														3						
																																	5%						
																																	2%						
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground																																				
Inundation Plug																																									
Grubbing/Stripping/Rough Grading																																									
	Pickup Truck	Ford F-150	365	No	Above Ground																															2	2	2	2	2	
																																		20%	20%	20%	20%	20%	
																																		100%	100%	100%	100%	100%	
	Excavator	John Deere 450D LC	348	No	Above Ground																															1	1	1	1	1	
																																		100%	100%	100%	100%	100%	
																																		75%	75%	75%	75%	75%	
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground																															1	1	1	1	1	
																																		50%	50%	50%	50%	50%	
																																		80%	80%	80%	80%	80%	
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground																															1	1	1	1	1	
																																		50%	50%	50%	50%	50%	
																																		50%	50%	50%	50%	50%	
	Standard Backhoe	Caterpillar 450E	124	No	Above Ground																															1	1	1	1	1	
																																		100%	100%	100%	100%	100%	
																																		80%	80%	80%	80%	80%	
	Front End Loader	Caterpillar 950H	197	No	Above Ground																															1	1	1	1	1	
																																		100%	100%	100%	100%	100%	
																																		80%	80%	80%	80%	80%	
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground																															2	2	2	2	2	
																																		100%	100%	100%	100%	100%	
																																		75%	75%	75%	75%	75%	
	Bulldozer	Caterpillar D8T	310	No	Above Ground																															1	1	1	1	1	
																																		100%	100%	100%	100%	100%	
																																		75%	75%	75%	75%	75%	
	Water Tanker	Peterbilt 340	330	No	Above Ground																															1	1	1	1	1	
																																		100%	100%	100%	100%	100%	
																																		75%	75%	75%	75%	75%	
	Hydroseeder	FINN Model T120 Hydroseeder	35	No	Above Ground																															1	1	1	1	1	
																																		20%	20%	20%	20%	20%	
																																		10%	10%	10%	10%	10%	
Final grading and paving																																									
	Grader	John Deere 770G/GP	245	No	Above Ground																																				1
																																							80%
																																							50%
	Paver	Caterpillar AP-1000D	224	No	Above Ground																																				1
																																							75%
																																							75%
	Roller	Caterpillar CB34 XW	46	No	Above Ground																																				1
																																							75%
																																							75%
	20 Yard Dump Truck	Kenworth T800	525	No	Above Ground																																				2
																																							75%
																																							75%
	Asphalt Flow Boy	Flow Boy 3064	425	No	Above Ground																																				1
																																							75%
																																							75%
	12 Yard Concrete Mixer	Peterbilt 365	455	No	Above Ground																																				1
																																							50%
																																							50%
	Water Tanker	Peterbilt 340	330	No	Above Ground																																				1
																																							75%

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	2016 Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	2017 Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	2018 Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
	Shotcrete Pump	Putzmeister TK 60 HP	131																																				
	Ventilation System	Not Estimated At This Time																																					
	Compressors	Sullair 750H	275																																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Concrete Truck	2003 STERLING LT8513	300																																				
	Fuel Truck	Freightliner FL-80	300																																				
	Potable Water Truck	Freightliner FL-80	300																																				
	Loaders	Caterpillar 950H	197																																				
	Concrete Pumps	Putzmeister TK 60 HP	131																																				
	Pump	Tsurumi TE3-100HA	8																																				
	150000 lb Winch	Ingersoll Rand HA3-075M	25																																				
	Hydraulic Winches	Ingersoll Rand LC2H500Q	??																																				
	100000 lbs Winch	Ingersoll Rand HA2-050M	9.4																																				
	PB Winch	Timberland E780 General Purpose Winch	??																																				
	Drill Jumbos	Sandvik DD530	228																																				
	Fork Lift	Caterpillar P20000	148																																				
	Excavator	Liebherr R 934 C Litronic	195																																				
Shaft 6B Connector Tunnel																																							
Excavation & Installation of Initial Support																																							
	Shaft Crane	LTM 1200-5.1	496																																				
	Compressors	Sullair 750H	275																																				
	Ventilation System	Not Estimated At This Time																																					
	Generators	Terex T360	426																																				
	Loaders	Caterpillar 950H	197																																				
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40																																				
	Shotcrete Delivery Plant	Not Estimated At This Time																																					
	Drill Jumbo	Sandvik DT920i	241																																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Fuel Truck	Not Estimated At This Time	300																																				
	Potable Water Truck	Not Estimated At This Time	300																																				
Inundation Plug																																							
Grubbing/Stripping/Rough Grading																																							
	Pickup Truck	Ford F-150	365																																				
	Excavator	John Deere 450D LC	348																																				
	Shaft Crane	LTM 1200-5.1	496																																				
	Concrete Truck	2003 STERLING LT 8513	300																																				
	Standard Backhoe	Caterpillar 450E	124																																				
	Front End Loader	Caterpillar 950H	197																																				
	20 Yard Dump Truck	Kenworth T800	525																																				
	Bulldozer	Caterpillar D8T	310																																				
	Water Tanker	Peterbilt 340	330																																				
	Hydroseeder	FINN Model T120 Hydroseeder	35																																				
Final grading and paving																																							
				1																																			
	Grader	John Deere 770G/GP	245	80%																																			
				50%																																			
				1																																			
	Paver	Caterpillar AP-1000D	224	75%																																			
				75%																																			
				1																																			
	Roller	Caterpillar CB34 XW	46	75%																																			
				75%																																			
				2																																			
	20 Yard Dump Truck	Kenworth T800	525	75%																																			
				75%																																			
				1																																			
	Asphalt Flow Boy	Flow Boy 3064	425	75%																																			
				75%																																			
				1																																			
	12 Yard Concrete Mixer	Peterbilt 365	455	50%																																			
				50%																																			
				1																																			
	Water Tanker	Peterbilt 340	330	75%																																			

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Shotcrete Pump	Putzmeister TK 60 HP	131
	Ventilation System	Not Estimated At This Time	
	Compressors	Sullair 750H	275
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT8513	300
	Fuel Truck	Freightliner FL-80	300
	Potable Water Truck	Freightliner FL-80	300
	Loaders	Caterpillar 950H	197
	Concrete Pumps	Putzmeister TK 60 HP	131
	Pump	Tsurumi TE3-100HA	8
	150000 lb Winch	Ingersoll Rand HA3-075M	25
	Hydraulic Winches	Ingersoll Rand LC2H500Q	??
	100000 lbs Winch	Ingersoll Rand HA2-050M	9.4
	PB Winch	Timberland E780 General Purpose Winch	??
	Drill Jumbos	Sandvik DD530	228
	Fork Lift	Caterpillar P20000	148
	Excavator	Liebherr R 934 C Litronic	195
Shaft 6B Connector Tunnel			
Excavation & Installation of Initial Support			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Ventilation System	Not Estimated At This Time	
	Generators	Terex T360	426
	Loaders	Caterpillar 950H	197
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40
	Shotcrete Delivery Plant	Not Estimated At This Time	
	Drill Jumbo	Sandvik DT920i	241
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Inundation Plug			
Grubbing/Stripping/Rough Grading			
	Pickup Truck	Ford F-150	365
	Excavator	John Deere 450D LC	348
	Shaft Crane	LTM 1200-5.1	496
	Concrete Truck	2003 STERLING LT 8513	300
	Standard Backhoe	Caterpillar 450E	124
	Front End Loader	Caterpillar 950H	197
	20 Yard Dump Truck	Kenworth T800	525
	Bulldozer	Caterpillar D8T	310
	Water Tanker	Peterbilt 340	330
	Hydroseeder	FINN Model T120 Hydroseeder	35
Final grading and paving			
	Grader	John Deere 770G/GP	245
	Paver	Caterpillar AP-1000D	224
	Roller	Caterpillar CB34 XW	46
	20 Yard Dump Truck	Kenworth T800	525
	Asphalt Flow Boy	Flow Boy 3064	425
	12 Yard Concrete Mixer	Peterbilt 365	455
	Water Tanker	Peterbilt 340	330

2019												2020												2021											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location
	Hydroseeder	FINN Model T120 Hydroseeder	35	No	Above Ground
Inundation Plug Construction - Plug Hole Construction (With BOP)					
	Drill Rigs - Plugs	Schramm T130XD	760	Yes	Above Ground
Inundation Plug Construction - Pump Shaft Construction					
	Drill Rigs - Pump Shaft -	Schramm T130XD	760	Yes	Above Ground
TBM Removal					
(TBM Tunneling) TBM Removal					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	TBM Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Above Ground
	Welder (Plant)	Not Estimated At This Time		No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Generators	Terex T360	426	No	Below Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
(TBM Tunneling) Tunnel Clean Up					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Other Surface Plant	Not Estimated At This Time		No	Above Ground
	Bobcat	S160 Skid Steer Loader	61	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of Final Liner					
Installation of CIP against TBM Tunnel (Eastside)					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of CIP liner against Connector Tunnel - 6B					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of Shaft Plug and Distribution Chamber					
Construction of Mass Concrete Shaft Plug					
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground

	J	F	M	A	J	J
2013	11	12				
2014			1	2	3	4

2013												
1	2	3	4	5	6	7	8	9	10	11	12	
Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	

2014												
1	2	3	4	5	6	7	8	9	10	11	12	
Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	

2015												
1	2	3	4	5	6	7	8	9	10	11	12	
Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	

75%
1
20%
10%

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
				75%																																		
	Hydroseeder	FINN Model T120 Hydroseeder	35	1 20% 10%																																		
Inundation Plug Construction - Plug Hole Construction (With BOP)																																						
					2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2																		
	Drill Rigs - Plugs	Schramm T130XD	760		83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%																		
Inundation Plug Construction - Pump Shaft Construction																																						
					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1																		
	Drill Rigs - Pump Shaft -	Schramm T130XD	760		83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%	83% 70%																		
TBM Removal																																						
(TBM Tunneling) TBM Removal																																						
																																		1				
	Shaft Crane	LTM 1200-5.1	496																															50%				
																																		30%				
	TBM Crane	LTM 1200-5.1	496																															1				
	Compressors	Sullair 750H	275																															2				
																																		10%				
																																		5%				
	Welder (Plant)	Not Estimated At This Time																																2				
																																		10%				
																																		5%				
	Excavator	Liebherr R 934 C Litronic	195																															1				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																															6				
																																		30%				
																																		15%				
	Ventilation System	Not Estimated At This Time																																1				
																																		100%				
																																		100%				
	Generators	Terex T360	426																															1				
	Fuel Truck	Not Estimated At This Time	300																															3				
																																		5%				
																																		2%				
	Potable Water Truck	Not Estimated At This Time	300																															3				
																																		5%				
																																		2%				
(TBM Tunneling) Tunnel Clean Up																																						
																																			1				
	Shaft Crane	LTM 1200-5.1	496																																30%				
																																			15%				
	Compressors	Sullair 750H	275																																1				
																																			40%				
																																			20%				
	Loaders	Caterpillar 950H	197																																1				
																																			25%				
																																			20%				
	Other Surface Plant	Not Estimated At This Time																																1				
	Bobcat	S160 Skid Steer Loader	61																																1				
																																			60%				
																																			40%				
	Excavator	Liebherr R 934 C Litronic	195																																1				
																																			15%				
																																			10%				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																1				
																																			25%				
																																			20%				
	Fuel Truck	Not Estimated At This Time	300																																1				
																																			5%				
																																			2%				
	Potable Water Truck	Not Estimated At This Time	300																																1				
																																			5%				
																																			2%				
Installation of Final Liner																																						
Installation of CIP against TBM Tunnel (Eastside)																																						
																																			1				
	Loco	Brookville Tunneling Locomotive	100																																60%				
																																			40%				
	Shaft Crane	LTM 1200-5.1	496																																1				
	Compressors	Sullair 750H	275																																1				
																																			13%				
																																			8%				
	Generators	Terex T360	426																																1				
																																			3%				
																																			1%				
	Concrete Pumps	Putzmeister TK 60 HP	131																																1				
																																			50%				
																																			30%				
	Concrete Truck	2003 STERLING LT 8513	300																																2				
																																			50%				
																																			25%				
	Fuel Truck	Not Estimated At This Time	300																																1				
																																			2%				
																																			2%				
	Potable Water Truck	Not Estimated At This Time	300																																3				
																																			5%				
																																			2%				
Installation of Shaft Plug and Distribution Chamber																																						
Construction of Mass Concrete Shaft Plug																																						
																																						30
	Concrete Truck	2003 STERLING LT 8513	300																																				50%
																																						25%
	Concrete Pumps	Putzmeister TK 60 HP	131																																				50
																																						50%
																																						25%
	Shaft Crane	LTM 1200-5.1	496																																				2
																																						10%
																																						5%
																																						2

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Hydroseeder	FINN Model T120 Hydroseeder	35
Inundation Plug Construction - Plug Hole Construction (With BOP)			
	Drill Rigs - Plugs	Schramm T130XD	760
Inundation Plug Construction - Pump Shaft Construction			
	Drill Rigs - Pump Shaft -	Schramm T130XD	760
TBM Removal			
(TBM Tunneling) TBM Removal			
	Shaft Crane	LTM 1200-5.1	496
	TBM Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Welder (Plant)	Not Estimated At This Time	
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Ventilation System	Not Estimated At This Time	
	Generators	Terex T360	426
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
(TBM Tunneling) Tunnel Clean Up			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Loaders	Caterpillar 950H	197
	Other Surface Plant	Not Estimated At This Time	
	Bobcat	S160 Skid Steer Loader	61
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Installation of Final Liner			
Installation of CIP against TBM Tunnel (Eastside)			
	Loco	Brookville Tunneling Locomotive	100
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Generators	Terex T360	426
	Concrete Pumps	Putzmeister TK 60 HP	131
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Installation of CIP liner against Connector Tunnel - 6B			
	Loco	Brookville Tunneling Locomotive	100
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Generators	Terex T360	426
	Concrete Pumps	Putzmeister TK 60 HP	131
	Excavator	Liebherr R 934 C Litronic	195
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Installation of Shaft Plug and Distribution Chamber			
Construction of Mass Concrete Shaft Plug			
	Concrete Truck	2003 STERLING LT 8513	300
	Concrete Pumps	Putzmeister TK 60 HP	131
	Shaft Crane	LTM 1200-5.1	496

2019												2020												2021											
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Compressors	Sullair 750H	275	No	Above Ground
	Generators	Terex T360	426	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
Excvation and Final Lining of Distirbution Chamber					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Shaft 6B PHASE 2 WORKS					
Inundation Plug					
Inundation Plug Construction - Plug Hole Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760	Yes	Above Ground
Inundation Plug Construction - Pump Shaft Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760	Yes	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time		No	Above Ground
Placement of Pea Gravel and Tremie Concrete Plug (ACTIVITY DURATION IS A WEEK - NO OVERLAP)	Compressors	Sullair 750H	275	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
Initial unwatering of the tunnel (activity duration is 5 days)	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250	No	Below Ground
Continued Unaterring of the tunnel	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250	No	Below Ground
Advanced Connector Tunnel (150 ft)					
Excavation & Installation of Initial Support					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40	Yes	Above Ground
	Shotcrete Delivery Plant	Not Estimated At This Time		Yes	Above Ground
	Drill Jumbo	Sandvik DT920i	241	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
Junction Chamber					
Excavation and Installation of Temp. support for Junction Chamber					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40	Yes	Above Ground
	Shotcrete Delivery Plant	Not Estimated At This Time		Yes	Above Ground
	Drill Jumbo	Sandvik DT920i	241	No	Below Ground

J F M A J J

2013: 1 2 3 4 5 6 7 8 9 10 11 12

2014: 1 2 3 4 5 6 7 8 9 10 11 12

2015: 1 2 3 4 5 6 7 8 9 10 11 12

Jan-13 Feb-13 Mar-13 Apr-13 May-13 Jun-13 Jul-13 Aug-13 Sep-13 Oct-13 Nov-13 Dec-13 Jan-14 Feb-14 Mar-14 Apr-14 May-14 Jun-14 Jul-14 Aug-14 Sep-14 Oct-14 Nov-14 Dec-14 Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15

Equipment by Task

					2016												2017												2018											
					1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18
		Fuel Truck	Not Estimated At This Time	300																																				2% 2%
		Compressors	Sullair 750H	275																																				1 5% 2%
		Generators	Terex T360	426																																				1 5% 2%
		Fuel Truck	Not Estimated At This Time	300																																				1 2% 2%
	Excvation and Final Lining of Distirbution Chamber																																							
		Shaft Crane	LTM 1200-5.1	496																																				
		Compressors	Sullair 750H	275																																				
		Generators	Terex T360	426																																				
		Loaders	Caterpillar 950H	197																																				
		Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
		Concrete Truck	2003 STERLING LT 8513	300																																				
		Fuel Truck	Not Estimated At This Time	300																																				
		Potable Water Truck	Not Estimated At This Time	300																																				
	Shaft 6B PHASE 2 WORKS																																							
	Inundation Plug																																							
	Inundation Plug Construction - Plug Hole Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760																																				
	Inundation Plug Construction - Pump Shaft Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760																																				
		Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
		Fuel Truck	Not Estimated At This Time																																					
	Placement of Pea Gravel and Tremie Concrete Plug (**ACTIVITY DURATION IS A WEEK - NO OVERLAP)**	Compressors	Sullair 750H	275																																				
		Loaders	Caterpillar 950H	197																																				
		Concrete Truck	2003 STERLING LT 8513	300																																				
		Fuel Truck	Not Estimated At This Time																																					
		Concrete Pumps	Putzmeister TK 60 HP	131																																				
	Initial unwatering of the tunnel (activity duration is 5 days)	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250																																				
	Continued Unaterring of the tunnel	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250																																				
	Advanced Connector Tunnel (150 ft)																																							
	Excavation & Installation of Initial Support																																							
		Shaft Crane	LTM 1200-5.1	496																																				
		Compressors	Sullair 750H	275																																				
		Generators	Terex T360	426																																				
		Loaders	Caterpillar 950H	197																																				
		Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40																																				
		Shotcrete Delivery Plant	Not Estimated At This Time																																					
		Drill Jumbo	Sandvik DT920i	241																																				
		Excavator	Liebherr R 934 C Litronic	195																																				
		Surface Truck	Mack Truck CV712, AMI-300 ASET	300																																				
		Concrete Truck	2003 STERLING LT 8513	300																																				
		Fuel Truck	Not Estimated At This Time	300																																				
		Potable Water Truck	Not Estimated At This Time	300																																				
		Ventilation System	Not Estimated At This Time																																					
		Concrete Pumps	Putzmeister TK 60 HP	131																																				
	Junction Chamber																																							
	Excavation and Installation of Temp. support for Junction Chamber																																							
		Shaft Crane	LTM 1200-5.1	496																																				
		Compressors	Sullair 750H	275																																				
		Generators	Terex T360	426																																				
		Loaders	Caterpillar 950H	197																																				
		Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40																																				
		Shotcrete Delivery Plant	Not Estimated At This Time																																					
		Drill Jumbo	Sandvik DT920i	241																																				

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	2019 Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	2020 Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	2021 Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
	Fuel Truck	Not Estimated At This Time	300																																				
	Compressors	Sullair 750H	275																																				
	Generators	Terex T360	426																																				
	Fuel Truck	Not Estimated At This Time	300																																				
Excvation and Final Lining of Distirbution Chamber																																							
	Shaft Crane	LTM 1200-5.1	496	1 20%																																			
				10%																																				
	Compressors	Sullair 750H	275	1 15%																																			
				10%																																				
	Generators	Terex T360	426	1 5%																																			
				2%																																				
	Loaders	Caterpillar 950H	197	2 35%																																			
				20%																																				
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	2 25%																																			
				15%																																				
	Concrete Truck	2003 STERLING LT 8513	300	1 15%																																			
				5%																																				
	Fuel Truck	Not Estimated At This Time	300	1 5%																																			
				2%																																				
	Potable Water Truck	Not Estimated At This Time	300	1 5%																																			
				2%																																				
Shaft 6B PHASE 2 WORKS																																							
Inundation Plug																																							
Inundation Plug Construction - Plug Hole Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760																						2 100%	2 100%													
																									100%	100%													
Inundation Plug Construction - Pump Shaft Construction (With BOP)	Drill Rigs - pilot holes	Schramm T130XD	760																						1 100%	1 100%													
																									100%	100%													
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																						3 10%	3 10%													
																									5%	5%													
	Fuel Truck	Not Estimated At This Time																							1 5%	1 5%													
																									2%	2%													
Placement of Pea Gravel and Tremie Concrete Plug (ACTIVITY DURATION IS A WEEK - NO OVERLAP)	Compressors	Sullair 750H	275																							1 15%												
																										10%												
	Loaders	Caterpillar 950H	197																							1 25%												
																										10%												
	Concrete Truck	2003 STERLING LT 8513	300																							24 30%												
																										5%												
	Fuel Truck	Not Estimated At This Time																								1 5%												
																										2%												
	Concrete Pumps	Putzmeister TK 60 HP	131																							2 30%												
																										5%												
Initial unwatering of the tunnel (activity duration is 5 days)	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250																							3 100%												
																										100%												
Continued Unaterring of the tunnel	Unwatering Pumps	Flowserve Bottom Intake Submersible Pumps	1250																							3 40%	3 40%	3 40%	3 40%									
																										40%	40%	40%	40%									
Advanced Connector Tunnel (150 ft)																																							
Excavation & Installation of Initial Support																																							
	Shaft Crane	LTM 1200-5.1	496																							1 35%												
																										20%												
	Compressors	Sullair 750H	275																							1 10%												
																										5%												
	Generators	Terex T360	426																							1 100%												
																										100%												
	Loaders	Caterpillar 950H	197																							1 30%												
																										20%												
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40																							1 25%												
																										15%												
	Shotcrete Delivery Plant	Not Estimated At This Time																								1 25%												
																										15%												
	Drill Jumbo	Sandvik DT920i	241																							1 50%												
																										30%												
	Excavator	Liebherr R 934 C Litronic	195																							1 10%												
																										5%												
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																							2 30%												
																										20%												
	Concrete Truck	2003 STERLING LT 8513	300																							1 50%												
																										30%												
	Fuel Truck	Not Estimated At This Time	300																							1 5%												
																										2%												
	Potable Water Truck	Not Estimated At This Time	300																							1 5%												
																										2%												
	Ventilation System	Not Estimated At This Time																								1 100%												
																										100%												
	Concrete Pumps	Putzmeister TK 60 HP	131																							2 30%												
																										25%												
Junction Chamber																																							
Excavation and Installation of Temp. support for Junction Chamber																																							
	Shaft Crane	LTM 1200-5.1	496																								1 35%												
																											20%												
	Compressors	Sullair 750H	275																								1 10%												
																											5%												
	Generators	Terex T360	426																								1 100%												
																											100%												
	Loaders	Caterpillar 950H	197																								1 30%												
																											20%												
	Shotcrete Mixers	Putzmeister MRV-2200 Shear Force	40																								1 25%												
																											15%												
	Shotcrete Delivery Plant	Not Estimated At This Time																									1 25%												
																											15%												
	Drill Jumbo	Sandvik DT920i	241																								1 50%												
																											30%												
																											1												

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Water Requirement	Location
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
	Ventilation System	Not Estimated At This Time		No	Above Ground
	Concrete Pumps	Putzmeister TK 60 HP	131	No	Above Ground
Final Lining / Backfill Junction Chamber					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Installation of Final Liner					
Final Lining Connector Tunnel					
	Loco	Brookville Tunneling Locomotive	100	No	Below Ground
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Generators	Terex T360	426	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Concrete Truck	2003 STERLING LT 8513	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Shaft 6B Operation or Post Construction	**Shaft 6B Operation or Post Construction**				
Overall Clean Up					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Bobcat	S160 Skid Steer Loader	61	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time	300	No	Above Ground
	Potable Water Truck	Not Estimated At This Time	300	No	Above Ground
Shaft 6B Demobilization					
	Shaft Crane	LTM 1200-5.1	496	No	Above Ground
	Compressors	Sullair 750H	275	No	Below Ground
	Loaders	Caterpillar 950H	197	No	Above Ground
	Bobcat	S160 Skid Steer Loader	61	No	Below Ground
	Excavator	Liebherr R 934 C Litronic	195	No	Above Ground
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300	No	Above Ground
	Fuel Truck	Not Estimated At This Time		No	Above Ground
	Potable Water Truck	Not Estimated At This Time		No	Above Ground
* Potable Water and Sanitation Removal					

	2013												2014												2015											
	J	F	M	A	J	J																														
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
	Ventilation System	Not Estimated At This Time	
	Concrete Pumps	Putzmeister TK 60 HP	131
Final Lining / Backfill Junction Chamber			
	Loco	Brookville Tunneling Locomotive	100
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Generators	Terex T360	426
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Installation of Final Liner			
Final Lining Connector Tunnel			
	Loco	Brookville Tunneling Locomotive	100
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Generators	Terex T360	426
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Concrete Truck	2003 STERLING LT 8513	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Shaft 6B Operation or Post Construction	**Shaft 6B Operation or Post Construction**		
Overall Clean Up			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Loaders	Caterpillar 950H	197
	Bobcat	S160 Skid Steer Loader	61
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Fuel Truck	Not Estimated At This Time	300
	Potable Water Truck	Not Estimated At This Time	300
Shaft 6B Demobilization			
	Shaft Crane	LTM 1200-5.1	496
	Compressors	Sullair 750H	275
	Loaders	Caterpillar 950H	197
	Bobcat	S160 Skid Steer Loader	61
	Excavator	Liebherr R 934 C Litronic	195
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300
	Fuel Truck	Not Estimated At This Time	
	Potable Water Truck	Not Estimated At This Time	
Potable Water and Sanitation Removal			

	2016												2017												2018											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18

Equipment by Task

Action	Resource	Equipment Model Assumption	Estimated Horsepower	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21
				1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
				2019												2020												2021											
	Excavator	Liebherr R 934 C Litronic	195																									10%										
																												5%										
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																									10										
																												30%										
																												20%										
	Concrete Truck	2003 STERLING LT 8513	300																									10										
																												50%										
																												30%										
	Fuel Truck	Not Estimated At This Time	300																									3										
																												5%										
																												2%										
	Potable Water Truck	Not Estimated At This Time	300																									3										
																												5%										
																												2%										
	Ventilation System	Not Estimated At This Time																										1										
																												100%										
																												100%										
	Concrete Pumps	Putzmeister TK 60 HP	131																									1										
																												30%										
																												25%										
Final Lining / Backfill Junction Chamber																																						
	Loco	Brookville Tunneling Locomotive	100																										2									
																													60%									
																													40%									
	Shaft Crane	LTM 1200-5.1	496																										1									
																													50%									
																													30%									
	Compressors	Sullair 750H	275																										1									
																													10%									
																													5%									
	Generators	Terex T360	426																										1									
																													100%									
																													100%									
	Excavator	Liebherr R 934 C Litronic	195																										4									
																													10%									
																													5%									
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																										2									
																													15%									
																													10%									
	Concrete Truck	2003 STERLING LT 8513	300																										10									
																													50%									
																													30%									
	Fuel Truck	Not Estimated At This Time	300																										3									
																													5%									
																													5%									
	Potable Water Truck	Not Estimated At This Time	300																										2									
																													5%									
																													5%									
Installation of Final Liner																																						
Final Lining Connector Tunnel																																						
	Loco	Brookville Tunneling Locomotive	100																											2								
																														60%								
																														40%								
	Shaft Crane	LTM 1200-5.1	496																											1								
																														50%								
																														30%								
	Compressors	Sullair 750H	275																											1								
																														10%								
																														5%								
	Generators	Terex T360	426																											1								
																														100%								
																														100%								
	Excavator	Liebherr R 934 C Litronic	195																											4								
																														10%								
																														5%								
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																											2								
																														15%								
																														10%								
	Concrete Truck	2003 STERLING LT 8513	300																											10								
																														50%								
																														30%								
	Fuel Truck	Not Estimated At This Time	300																											3								
																														5%								
																														5%								
	Potable Water Truck	Not Estimated At This Time	300																											2								
																														5%								
																														5%								
Shaft 6B Operation or Post Construction	**Shaft 6B Operation or Post Construction**																																					
Overall Clean Up																																						
	Shaft Crane	LTM 1200-5.1	496																												1	1						
																															15%	15%						
																															5%	5%						
	Compressors	Sullair 750H	275																												1	1						
																															10%	10%						
																															5%	5%						
	Loaders	Caterpillar 950H	197																												2	2						
																															25%	25%						
																															15%	15%						
	Bobcat	S160 Skid Steer Loader	61																												2	2						
																															25%	25%						
																															15%	15%						
	Excavator	Liebherr R 934 C Litronic	195																												1	1						
																															5%	5%						
																															2%	2%						
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																												4	4						
																															10%	10%						
																															5%	5%						
	Fuel Truck	Not Estimated At This Time																													1	1						
																															5%	5%						
																															2%	2%						
	Potable Water Truck	Not Estimated At This Time																													1	1						
																															5%	5%						
																															2%	2%						
Shaft 6B Demobilization																																						
	Shaft Crane	LTM 1200-5.1	496																														1	1					
																																	15%	15%					
																																	5%	5%					
	Compressors	Sullair 750H	275																														1	1					
																																	10%	10%					
																																	5%	5%					
	Loaders	Caterpillar 950H	197																														2	2					
																																	25%	25%					
																																	15%	15%					
	Bobcat	S160 Skid Steer Loader	61																														2	2					
																																	25%	25%					
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	Excavator	Liebherr R 934 C Litronic	195																														1	1					
																																	5%	5%					
																																	2%	2%					
	Surface Truck	Mack Truck CV712, AMI-300 ASET	300																														4	4					
																																	10%	10%					
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	Fuel Truck	Not Estimated At This Time																															1	1					
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																																	2%	2%					
	Potable Water Truck	Not Estimated At This Time																															1	1					
																																	5%	5%					
																																	2%	2%					
* Potable Water and Sanitation Removal																																						